

Counterpoint: Essays in Archaeology and Heritage Studies in Honour of Professor Kristian Kristiansen

Edited by

Sophie Bergerbrant
Serena Sabatini



BAR International Series 2508
2013

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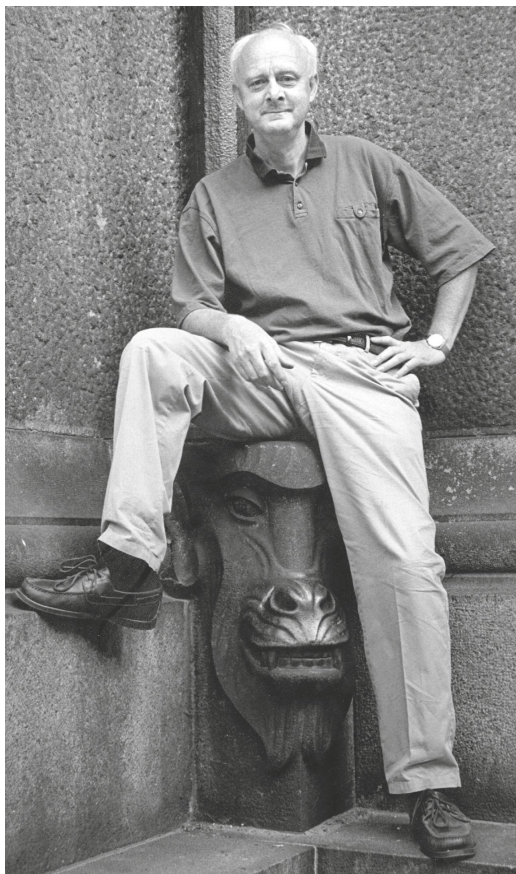
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PREFACE



The idea of this volume matured gradually over time. Our first meeting, when we formally set up the project and started work on it, took place in Gothenburg in May 2009. Much has happened since then, and many decisions have had to be made, but somehow we have managed to conclude this incredible project without harming each other and have even emerged on speaking terms!

We knew from the start that the result could only be a mammoth volume with an enormous number of contributions from all over the world, and yet we still had not anticipated the huge response we got! In total the book comprises 87 articles written by 121 contributors – needless to say, the logistics were daunting at times. We knew also that it would become both time consuming and stressful, and indeed it ‘robbed’ us of more evenings and weekends than we had thought possible. Nevertheless, it has been a very rewarding time. In true Kristian spirit, we have had editorial meetings in Gothenburg, at various EAA conferences and one very warm week of joint work at Serena’s country house in Italy in the summer of 2012.

Knowing Kristian’s work and personality it is not going to be a surprise to most readers to find a wide range of topics and issues relating to archaeology and heritage studies. As editors this journey has been, using a metaphor dear to Kristian, a sort of exciting Odyssey through the many languages of present academic discourses and we hope it makes interesting and enriching reading.

Why *Counterpoint*? Kristian is not only passionate about archaeology, but he is also a skilled musician, as many of you will know. Many of us have heard him play, at a conference

party, at the end of the Christmas dinner at the Department of Historical Studies of Gothenburg University or in a more private setting. His talent at the piano has even become legendary, having entered the archaeological scientific literature thanks to closing words in Andrew Sherratt’s article *Who are you calling Peripheral?: Dependence and Independence in European Prehistory*.¹ Intense discussions in search of an appropriate title led us to a single word – *counterpoint* – that encompassed Kristian’s complex character and achievements. Counterpoint aptly describes his influential role in the discipline, encapsulates his willingness to encourage archaeological researchers and enter into healthy debate, and also acknowledges his capacity to set the standard to which others respond. At the same time it speaks to his love for music, which we know is also close to his heart. It is with all this in mind that we name this volume: *Counterpoint: Essays in Archaeology and Heritage Studies in Honour of Professor Kristian Kristiansen*.

This book could not have been completed without the kind encouragement and practical support of Professor Lotte Hedeager, who we thank for assisting us throughout the many stages of producing the book, and in particular for keeping it a secret from Kristian (which we appreciate must have been difficult at times). We are also grateful to Archaeopress who did not bat an eye when we started to talk about the size of the volume. Without the financial support from Berit Wallenbergs Stiftelse, Torsten Södebergs Stiftelse, Department of Historical Studies, Gothenburg University and Stiftelsen Långmanska Kulturfonden this book could not have been printed. Dr Kristin Bornholdt Collins consulted on language-related issues and has proofread the articles and supporting materials, and we are grateful for all her help and language support through the various stages of producing the book. Finally, we would like to thank our friends and colleagues, and not least our families, for their immense patience with us over the past years and in particular the last few months.

Last but not least we would like to congratulate Professor Kristian Kristiansen on his 65th Birthday!

Gothenburg and Trondheim, 2013-02-10

¹ The article is published 1993 in C. Scarre and F. Healy (eds.), *Trade and exchange in prehistoric Europe*: 245-255. Oxford: Oxbow Book (Oxbow Monograph 33). The piece closes at page 253 this way: *Hold on – Kristian Kristiansen has just sat down at the piano, and I think Sara Champion is going to sing ‘The World System Blues’*. [...]

INTRODUCTION

Professor Kristian Kristiansen is a highly respected scholar and an archaeologist of international renown. His interests are varied and include many dimensions of archaeological research, from early prehistory to the Iron Age, and his influence has been particularly strong in areas relating to the European Bronze Age - which is not to overlook his significant contributions to the field of cultural and heritage studies.

Kristian started his career as a student at Aarhus University, and graduated in 1975. Between 1976 and 1979 he held a research scholarship at Aarhus University, and during this time he wrote important articles such as *The consumption of wealth in Bronze Age Denmark. A study in dynamics of economic processes in tribal societies*, which have become classics in European archaeology, as demonstrated by many of the contributions in this volume.

In 1979 he became the director of the Division of Cultural History of the National Forest and Nature Agency (today Heritage Agency of Denmark), where he worked actively until 1994. During this time he initiated a number of large projects including:

- National restoration campaigns of medieval ruins
- National restoration campaigns of megaliths
- Digital recording of the Danish National Inventory of Archaeological Sites
- Systematic survey of underwater sites and shipwrecks
- A national information campaign at 700 selected monuments
- Natural gas rescue project
- 10-year project of systematic pollen diagrams in Denmark
- The Thy Archaeological Project 1990-1997 in collaboration with UCL (Michael Rowlands) and UCLA (Timothy K. Earle).

Some of these initiatives are ongoing or have developed in new directions, and the direct results may be traced throughout the volume. This recurring theme is very much a testament to Kristian's far-reaching influence and great achievements, particularly in the field of cultural heritage preservation.

In 1994 he left Denmark and became Professor of Archaeology at the University of Gothenburg, Sweden. It seems *a posteriori* that his dedication to research and to the development of research projects, which has involved the participation of senior academics as much as young students, was a perfect match for this arena. He continued his ambitious academic pursuits and engagement in many projects, either as the leader or as a member of large international teams. During the last 20 years the Department of Archaeology (today Department of Historical Studies) of Gothenburg University has become a leading international centre of research with a strong archaeological environment greatly enriched by the many Ph.D. students, post-docs and researchers who have passed through the department over the years.

Kristian has been a key advocate of many projects in recent years. These include, but are not limited to:

- The Emergence of the European Communities (1997-2006)
- From Coast to Coast (1998-2002)
- Rock Art Archives of Sweden (2007-ongoing) <http://www.shfa.se/?lang=en-GB>
- Travels, Transmissions and Transformations in Temperate Northern Europe during the 3rd and 2nd millennium BC: the Rise of Bronze Age Societies (2011-ongoing). <http://the-rise.se/>
- Forging Identities: The Mobility of Culture in Bronze Age Europe (2009-2012) <http://www.forging-identities.com/>

All of them are characterized in the first place by being interdisciplinary, and are based on exchanges of expertise and the interaction of researchers at various levels. They have all involved a large number of Ph.D. students, and thus provided opportunities to a whole generation of young European researchers who, thanks to Kristian, have begun their careers in a stimulating and vibrant international and interdisciplinary environment.

In brief, Kristian's academic work is above all else a reflection of his passion for international collaborations and interdisciplinary studies, as foreshadowed by the Thy archaeological project. His extraordinary enthusiasm is expressed well in several papers throughout the book. A fair account of his multifaceted commitment to archaeology must not forget his engagement in the *European Association of Archaeologists*, of which he was one of the main instigators, and in which he has been actively involved ever since. It should also include his active membership of several national and international academies, committees and societies such as the Royal Swedish Academy of Letters, History and Antiquities, the Deutsche Archäologisches Institut and the European Science Foundation, to name but a few.

Since the 1970s his commitment to archaeology has progressed and developed in parallel with his engagement in cultural

heritage management and studies as demonstrated (see Kristian Kristiansen's bibliography) for example by the many papers and official reports he wrote on the subject. Over the years he has held many positions, among them:

- (1979-1994) director of the *Danish Archaeological Heritage Administration*
- (1984-1992) member of specialist group for *The Archaeological Plan of Europe* promoted by the Council of Europe and of the ICOMOS committee
- (1982-1992) member of the ICHAM (= *International Committee on Heritage Management*) which produced the first international charter on heritage management.
- (current) member of the working group for the *Cultural Heritage Seminar at Gothenburg University*

In 1985 his contribution to the promotion of preservation of heritage earned him the prestigious Danish title of 'Knight of Danebrog' presented by the Danish Queen, and in 2005 the 'European Archaeological Heritage Prize' awarded by the European Association of Archaeology.

As can be seen below the articles in this book are a clear reflection of Kristiansen's wide-ranging archaeological and heritage interests. They reach across a vast geographical area and an even broader time span. The task of sorting the diverse contributions was not an easy one. Perhaps not too surprisingly, multiple possible logical outlines of the book presented themselves. After much consideration we settled on the present outline, which combines a variety of distinct units each with a thematic and internally coherent chronological focus.

Beyond Academia

This books open with a section which provides an opportunity for the reader to become acquainted with Kristian Kristiansen as a person beyond his administrative and academic passions and duties. In his *Family Life* paper, Niels Hedeager Kristiansen, who enthusiastically accepted the invitation to contribute to this project, warmly describes what it was like to grow up with two lovely parents who are also some of the most prominent, influential and erudite European archaeologists of at least the last 30 years of academic history.

Other articles throughout the section contain various narratives about Kristian and his multifaceted involvement in archaeology. However, thanks to Joakim Goldhahn's contribution *Six Periodic Encounters with Kristian Kristiansen* we view in sharper focus the author Kristian and his work, in particular from when he moved to Sweden to become Professor at Gothenburg University.

Two more articles, *On the Organization of European Archaeology* by Willem Willems and 'The EAA is Up and Running': *Behind the Scenes of the Inaugural Meeting of the European Association of Archaeologists* by Pedrag Novakovic, complete the section. With acute insights and an intimate sense of shared personal journeys they provide accounts of the significant moments from behind the scenes leading to the foundation of the European Association of Archaeology.

Landscape, demography and subsistence economy

Kristian has been involved in many excavation projects and has written numerous seminal articles dealing with subsistence economy. His engagement in these is clearly seen in this section, where the topics range from the Mesolithic to the Iron Age.

The section starts with a contribution dealing with the importance of food, and the management of elk in Mesolithic Norway. Per Persson's *Changes During the Late Mesolithic in the Central Scandinavian Inland* argues that management of food occurred before the Neolithic transition in Scandinavia. Anders Fischer takes on board old myths known from Mesopotamia (and later) about the big flood and compares this with established archaeological facts from Denmark and the Near East in his contribution *The Stone Age Flood in Denmark and Mesopotamia*. Karl-Göran Sjögren and Douglas T. Price's article *Vegetarians or Meat Eaters? Enamel $\delta^{13}C$ and Neolithic Diet at the Frälsegården Passage Tomb, Central Sweden* discusses diet based on people buried in megaliths in Falbygden, Sweden. The main focus here is on the relationship between vegetable and meat intake of food. Diet then takes us away from Scandinavia and into the Steppe and Caucasus. The contribution *The Steppe and the Caucasus During the Bronze Age: Mutual Relationships and Mutual Enrichments* by Natalia Shishlina discusses mobility on the steppes based on isotope studies. John Bintliff's contribution *Catchments, Settlement Chambers and Demography: Case Studies and General Theory in the Greek Landscape from Prehistory to Early Modern Times* takes us from the steppes to Greece. Based on extended fieldwork it discusses landscape use over the long term in the province of Boeotia.

In *Expecting the Unexpected: Százhalombatta-Földvár Surprises Once Again* Magdolna Vicze presents surprising results from the ongoing excavations at the Százhalombatta Bronze Age tell. Vicze's contribution is just one of several presenting results that have been obtained within a major project involving Kristian and many others, *The Emergence of European Communities: Household, Settlement and Territory in Later Prehistory (3200-300 BC)*. Hans-Peter Stika and Andreas G. Heiss's contribution *Seeds from the Fire: Charred Plant Remains from Kristian Kristiansen's Excavations in Sweden, Denmark, Hungary and Sicily* includes many of the excavations in the abovementioned project, viewing them together in a comparative archaeobotanical analysis, taking us from Sicily to Scandinavia. Kristian's first big project *The Thy*



Fig. 1 EAA Inauguration meeting in Ljubiana (1994). Photo: Lotte Hedeager.

Archaeological Project 1990-1997 was co-directed with Jens-Henrik Bech, Michael Rowlands and Timothy Earle, and is represented in the contribution by Jens-Henrik Bech and Karen Margrethe Hornstrup 'Zone 4' – *Bronze Age Settlement in Thy, North-West Denmark: an Update on an Old Discussion about a Boom and Possible Subsequent Crisis*, which takes two publications by Kristian from 1978 as their starting point for discussion. This article includes the results from the Thy Project as well as later excavations on Thy and views it in the light of Kristian's early work. Mads Kähler Holst and Marianne Rasmussen's article *Herder Communities: Longhouses, Cattle and Landscape Organization in the Nordic Early and Middle Bronze Age* focuses on one site in Jutland and discusses landscape organization based on mounds, longhouses and cattle. In their article they propose a new hypothetical model for this based on long-distance herding. Chris Gosden discusses similar questions, but in a different region, in his article *Fields*, where he explores the evidence of agriculture within the Middle Bronze Age fields systems. He concludes that it is not as clear-cut as sometimes previously believed, just as in Holst and Rasmussen it becomes clear that the Bronze Age landscape and subsistence require more research.

Joel Berglund's article *The Nature of Focal Places* transports us to the Arctic world of Greenland where we encounter cultures with different subsistence strategies, such as the Dorset Culture and the Norse culture. He highlights a fundamental element of continuity in the desire to create focal places, which are as just as important today as in the past.

Rituals, hoards and wetlands

Kristian's earliest work and first publications dealt with hoards, and lately he has returned to the question of ritual and ritual economy. This section has a large number of contributions involving many different aspects of wetlands hoards and ritual. The main focus, however, is on hoards in the Bronze Age.

This section begins with an article by Leo S. Klejn, *Zoomorphic Sceptres and the Unicorn*, which discusses the mythical creature, the unicorn, and its manifestation and symbolism in a peculiar artefact type that has been called a 'zoomorphic sceptre'. From the mythical unicorn in steppe cultures we move to the role of the horse in Bronze Age Scandinavia in Kristin Armstrong Oma's piece, *Bronze Age Horses: Beyond Dualist Explanations*. It argues for both a celestial significance and a more practical hands-on experience of horses in the Bronze Age. Another article discussing human-animal relationships, this time focusing on a ritual sphere, is *Lady of the Battle and of the Horse: on Anthropomorphic Gods and their Cult in Late Bronze Age Scandinavia* by Jeanette Varberg. The article discusses the role of women in ritual activities as 'cult specialists' based on rock art, hoards and burials with horse gear, and argues that both women and horses had their place in the cosmic sphere. Tove Hjørungdal's article examines the hoard from Budense and discusses women's roles and human-animal relationships in her contribution *Budsene for Better and for Worse: Diffractions of the Lives of Farmer Women in the Late Bronze Age*.

Helle Vandkilde's contribution takes us from the realm of women to that of men and warfare. In *Bronze Age Voyaging and Cosmologies in the Making: the Helmets from Viksø Revisited* she unites warfare, journeys and the ritual world

in her discussion about the two helmets found in Viksø. The social role of hoards is also the theme in the two articles that follow. First is that by Svend Hansen, who discusses the social role of hoards based on one case study. His paper *Bronze Age Hoards and their Role in Social Structure: a Case Study from South-West Zealand* argues for the need of more chronologically broad landscape and supraregional analyses of hoards and their contents in order to distinguish long-term trends such as centres of wealth. The topic of the social meaning of hoards is further examined in the paper by Alexander Gramsch and Thomas Meier *An Archaeological Outline of Ritual Dynamics and Social Space*.

With Sophie Bergerbrant, Christina Fredengren, Petra Molnar and Camilla Löfqvist's contribution *Violent Death and Wetlands: Skeletal Remains from Gotland* we stay within the wetland sphere but move from the classical hoards to different types of depositions of human remains in bogs. The article takes a long-term perspective even if the focus is on the Bronze Age depositions of human remains on the island of Gotland. The next article, by Ulla Mannering and Niels Lynnerup, deals with bog bodies rather than bog skeletons - or rather, with a foot. *From Foot to fact: new light on the Fræer Bog Find* demonstrates just how much information can be gleaned from something that from the outset seems rather insignificant, a shoe with a foot inside it, when new scientific methods are applied. In Bengt Nordqvist's contribution *Symbols of Identity: a Phenomenon from the Migration Period Based on an Example from Finnestorp* we move from the small-scale wetlands finds to the large scale, the Migration Period war-booty sacrifice site at Finnestorp. He relates some of the symbols observed on the artefacts found with those in Norse mythology.

Rock art

Rock art research is something Kristian has taken a keen interest in, for example he is one of the masterminds behind the ongoing project *Rock Art: Archive of Sweden*. His involvement in this field of research is reflected in the impressive variety and broad scope of the articles here. Pilar Prieto Martinez's article *Deer, Goats, Suns, Faces and Geometric Designs: Symbols of Power in Prehistoric Pottery from Atlantic Europe* discusses geometric designs on pottery and relates them to rock art and warriors. Maleness and warriors on rock art are also discussed in Christian Horn's article *Violence and Virility*. Both of these articles encompass the Copper Age and Early Bronze Age. Ulf Bertilsson's article discusses a motif that is common in many different time periods and geographical regions, the footprint, in the article *Footprints on the Rock Faces – Following the Tracks of Cosmological Archetypes and Pictograms for Millennia of Prehistory* takes us on a whirlwind jaunt from Israel to Scandinavia. The remaining articles in this section all deal with the Scandinavian rock art tradition, from the Late Neolithic to the Iron Age. Lasse Bengtsson's piece *Rock Art Ships as a Method for Dating* points out that the actual time span for rock art is longer than normally viewed in Scandinavia and it endeavours to create a typology for Iron Age rock art ships.

Per Cornell and Johan Ling discuss social dimensions of rock art in their contribution *Rock Art, Agency and Society*. They link the Bohuslän rock art to a maritime group identity rather than attributing it to a chiefly connection. Flemming Kaul bases his article *Round and Round We Go – With Concentric Circles* on newly found rock carvings on the island of Bornholm. Drawing on concepts such as intervisibility, it identifies a relationship between the rock art on Bornholm and that in eastern Scania. In her article, *An Epos Carved in Stone: Three Heroes, One Giant Twin, and a Cosmic Task*, Lene Melheim draws on Indo-European mythology to elucidate the rock art panel from Fossum.

Graves and burial monuments

Burials are a rich and fundamental source in archaeology and are visible in most of the sections in this book in different ways. Approaches to burial archaeology range from osteological analyses to investigations of the monuments themselves. In the contribution *Setting Her Even Straighter: Further Notes on the Osteology and Necrodynamics of the Mesolithic Burial from Barum, Scania, Sweden*, Torbjörn Ahlström shows that taking a fresh look at the documentation from old burials in combination with osteology can produce fruitful new insights, in this case about the so-called Barum woman.

Kristiansen's engagement in the Megalithic tradition, as seen in the restoration project and his involvement with the Coast to Coast project, are acknowledged in several articles in this volume. In this section it is seen in two contributions: firstly, that of Tony Axelsson entitled *Local Logic, Passage Graves and the Neolithic Landscape of Falbygden*, which discusses human interaction in relation to Megalithic monuments and landscapes in Falbygden based on some recent excavations. The second is Einar Østmo's *Towards a Border - Traces of Megalithic Ritual in the Norwegian Fjord Country*, which deals with the question of whether there is any evidence of the megalithic and funnel beaker culture (TRB) in Norway.

The reader is then transported back in time from Scandinavia and southward, to the legendary site of Varna, which John Chapman discusses in his contribution *Expansion and Social Change at the Time of Varna*. Based on a number of new radiocarbon dates from this time period and region he connects the burials from Varna with settlement changes. We then move east, returning to the Megalithic, with Viktor Trifonov's contribution *What Distinguishes Caucasian Megaliths from European Ones?*, which investigates the origins and context for the often overlooked megaliths in the Caucasus.

From here we take a large leap back to Scandinavia starting with Henrik Thrane's piece *Bronze Age Megalomania*, which discusses another type of large-scale monument. It deals with Late Bronze Age monumental mounds, focusing on the island of Funen in Denmark. Bronze Age mounds are the main focus of Tore Artelius' article, too. However, in *Making History: Ritual Variation in Pre-Christian Viking Age Reuse of Bronze Age Monuments in Halland, South-Western Sweden*

he discusses the reuse of mounds in the Viking Age. He reminds us that we are not the first people to be interested in ancient remains, and that Bronze Age mounds have been seen as meaningful in different time periods. For instance, the Viking Age treatment of the mounds should not be seen as plundering, but rather a result of meaningful activities.

Materiality and social concerns

This section combines various approaches and perspectives to form an exciting collection of essays discussing material culture and its social value. It could start with nothing other than Timothy K. Earle's reflections on the interrelationship between materiality, materialism and materialization. *The 3M: Materiality, Materialism, and Materialization* is not only a theoretical article, but yet another fitting tribute to Kristian and his particularly broad commitment to archaeology.

Johanna Sofaer's *Cosmologies in Clay: Swedish Helmet Bowls in the Middle Bronze Age of the Carpathian Basin* enriches the section by elucidating the possibility of reading cosmological symbols in material culture without necessarily implying the cultural nature of the context in which they have been found; thus entailing also the existence of a sophisticated level of interaction between objects and people. Andrew Jones' *In small Things Remembered: Scale, Materiality and Minatures in the British Early Bronze Age* attempts to demonstrate how it was not only material culture that might be exchanged and moved around in order to articulate social relationships in different areas, but how the very same material form and characteristics might embody the significance of an object's place of origin.

The essay *Drinking in Times of Crisis: Alcohol and Social Change in Late Bronze Age Italy* by Cristiano Iaia provides a detailed account of how, through the materiality of drinking sets, we can problematize the social significance of alcohol consumption during the Italian early part of the Late Bronze Age (*Bronzo Recente*) among the emerging local elites who come to dominate later parts of proto-history and early history on the peninsula.

In the light of new discoveries and research Bogusław Gediga argues how archaeological evidence supports the redrawing cultural borders. In his essay *The Culture of the Early Iron Age in the South-Western Regions of Poland in the Light of new Research* he discusses how material culture of the Early Iron Age in the south-western regions of Poland appears to be much more consistent with that of the Hallstatt rather than with the Lusatian world.

Both Christian Mühlenbock with the paper *Having an Axe to Grind: an Examination of Tradition in the Sicilian Iron Age* and Elisabeth Arwill-Nordbladh with *Golden Nodes – Linking Memory to Time and Place* discuss issues of memory and meanings. Working in two completely different contexts, respectively Sicily during the sixth and fifth centuries BC and Scandinavia during the local Roman Iron Age and Viking Age, both scholars argue for the re-use and/or reproduction of ancient objects. This area of research investigating 'the past in the past' highlights the awareness humans have of previous ages and the diversity of narratives that precede us.

In *A Choreography of Furniture: the Art of Sitting, Standing Up and Lying Down* Jarl Nordbladh proposes an original and very interesting approach to the significance of objects, in this case furniture, not only as a means of prestige, as they are often seen in the archaeological literature, but also as material culture that has certain significant ways of being used and is therefore indicative of relations between their users. The essay *The Playful Archaeologist: an Approach to Gaming Remains from Bronze Age Mohenjo-Daro* by Elke Rogersdotter also partly discusses the materiality of objects, here with reference to the gaming evidence, and the interrelationships it represents, from the Bronze Age Indus Valley.

Marie Louise Stig Sørensen offers another scientific essay which also sheds light on Kristian's life and academic work. In *A sword for the chief – a conversation with Kristian*, she discusses the relationship between meaning and difference with regard to objects in general and Early Bronze Age swords in particular, arguing that their significance lies not only in their use, but also in their making.

Technology and craftsmanship

The role of bronze-working has long been studied in archaeology, and it has therefore naturally played an important role in Late Neolithic and Bronze Age research. In recent years this dimension has expanded to include more craft production areas, such as ceramics and textiles. These areas now represent vital and constantly evolving specialist areas within the field of archaeological research, and their importance has not been overlooked by Kristian Kristiansen. This section highlights some of the work currently being conducted in areas relating to craft production, particularly as it relates to the spread of ideas in the Bronze Age.

In *Missed Innovation: the Earliest Copper Daggers in Northern Central Europe and Southern Scandinavia* Johannes Müller discusses an innovation that never took off, or rather one that was ignored for a long time. He points out that the two copper daggers found in a Funnel Beaker context never spread and that it took time before copper/bronze daggers were re-introduced to the local society. Deborah Olausson's *The Flintknapper and the Bronzsmith* discusses the transition from stone to bronze from the perspective of the craftsman. It explores the concept of specialists in the Late Neolithic and Bronze Age based on material from southern Sweden.

Taking a novel approach to the question of technology, Arkadiusz Marciniak and Haskel Greenfield examine the use

of metal tools in butchering during the Neolithic and Bronze Age in *A Zooarchaeological Perspective on the Origins of Metallurgy in the North European Plain: Butchering Marks on Bones From Central Poland*. They demonstrate that metal tools were actually adopted only gradually through the Bronze Age, with lithics continuing in common use for butchering animals. In *Travels, Transmissions and Transformations – and Textiles*, Marie-Louise Nosch, Ulla Mannering, Eva Andersson Strand and Karin Margarita Frei focus on textiles, a topic that has recently been given greater attention within archaeology. The authors investigate textiles, skins and tools from Bronze Age Denmark in order to obtain a deeper understanding of different textile techniques. From the very rare finds of textile, we move to one of the most common archaeological materials, namely ceramics. Attila Kreiter, Szabolcs Czifra, Éva Széles, Mária Tóth and Orsolya Viktorik examine the technology and composition of Hallstatt ceramics from a Vekerzug group in north Hungary in *Petrographic, LA-ICP-MS and XRD Analyses of Hallstatt Ceramics from a Scythian Age Settlement in North Hungary*, showing that some of the material was locally made and some was imported.

The last three articles in this section deal with the technology relating to travel. The first contribution is by Peter Skoglund and Joakim Wehlin who discuss Bronze Age ships from a ship setting from Gotland in *A Bronze Age Ship Made of Stone: Record and Analysis of a Ship Setting from Lau, Gotland*. They argue that the ship is a three-dimensional stone representation of a contemporary wooden ship and that we can gain insight into travel and boat technology from the stone ship settings. Magnus Artursson also discusses boat technology based on stone ship settings, however his focus is on examples found in southern Sweden. In *Ships in Stone: Ship-Like Stone Settings, War Canoes and Sailing Ships in Bronze Age Southern Scandinavia* he argues that some boats with sails were already present in Bronze Age Scandinavia. In the last article in this section we move from flowing water to snow and the technology of travel in a wintry landscape in northern Europe. Jussi-Pekka Taavitsainen and Timo Kuokkanen shed important light on the generally overlooked research area of winter travel in *There was Snow in the Bronze Age - the Role of Winter in Spreading Innovations in the Bronze Age*. They present the evidence for different types of Bronze Age sledges, suggest the relative ease of transport in this manner and expand on the commerce that inspired improved technology to facilitate trade.

Travel and Transmission

This section deals with one of the central topics in Kristiansen's work and international projects, and in fact issues of travels and transmission are also inevitably touched upon in many other essays throughout the book. The contributions in this cluster discuss specific issues relating to the main theme, defining its complex character.

Michael Rowlands and Johan Ling's essay *Boundaries, Flows and Connectivities: Mobility and Stasis in the Bronze Age* opens the section. Thanks to an ongoing project on metal sourcing in northern Europe they are able to argue in favour of systems of exchange and connectivity which seem to bind together all of Europe and the Mediterranean in an exciting web of networks and exchange patterns. Although with a different perspective and focus, complementary reflections are expressed by Harry Fokkens, Patrick Valentijn and David Fontijn. Focusing on travels rather than exchange they provide relevant food for thought as far as the existence and management of various maritories in the southern North Sea and Britain in their paper *Archaeology from the Dutch Twilight Zone*.

Two contributions in particular take the reader to geo-cultural contexts relatively far from the area most discussed in the book and studied by Kristian. At the same time they both show how certain theoretical approaches may be applied in contexts that are different from those for which they have originally been formulated. *Dilmun: Beyond the Southern Frontier of Mesopotamia* by Flemming Højlund analyses the Dilmun temple complex and its networks with Mesopotamia in the light of new evidence from recent excavations on the island of Failaka. While in *Leaving Safe Harbours: Movement to Immobility, Homogeneity to Diversification. A Comparative Archaeological Sequence from the Western Pacific* Matthew Spriggs successfully envisages Kristian's work in the Pacific contexts of the Lapita culture and its impressive expansion at the turn of the second and first millennia BC.

Mysterious Raw Material from the Far North: Amber in Mycenaean Culture by Janusz Czebreszuk presents new thinking on the luxury good amber, the circulation of which bridged Northern Europe and the rest of the continent including the Mediterranean basin.

The section is concluded by Anders Andrén's thought-provoking essay, *The Importance of Foreign Young Men*. Through examples drawn from Scandinavia, Central Europe and the eastern Mediterranean, the scholar discusses the necessity to reconsider warrior graves as the expression of the elite and rather consider the documented, at least in certain periods, presence of foreign, maybe unfree or marginalized, and yet socially significant, young warriors.

Problematizing the past

This section is perhaps the most heterogeneous in the whole book, nonetheless all of the contributions are driven by the necessity to problematize specific aspects of the past.

John Barrett's *Genes and Agents: Closing the Theoretical Gap* opens the section with a probing essay on the necessity to question the Darwinian mechanisms of evolution for both biological and human socio-cultural histories. It argues in

favour of the evolution of biological systems in response to agencies that aim to move genetic materials, environmental resources and energy across systems' boundaries.

Evolutionary patterns are also central in the illuminating essay by Ian Hodder on the case study of Çatalhöyük. In *Human-Thing Evolution: the Selection and Persistence of Traits at Çatalhöyük*, Turkey, Hodder explores non-biological evolution in terms of changing conditions of entanglement and fittingness.

A completely different problematization of the past is presented by Nick Thorpe in his paper *Beaker Period Europe - Fighting, Feuding or the Enemy Within?* Through a series of case studies Thorpe discusses how we might explore the role of violence and warfare in European Chalcolithic societies, without underestimating the significance of local pre-existing traditions in the shaping of the different categories under study.

Italy in Late Bronze Age Europe: from Margin to Counterpoint by Emma Blake reveals the urgent necessity for a deeper understanding in the international arena of the Bronze Age archaeological evidence from the Italian Peninsula.

Cristopher Prescott approaches the renewed interest in Indo-European studies, largely promoted in several recent works by Kristian, focusing on the significant case study of Norway. *Recurrent Themes: Indo-Europeans in Norwegian Archaeology* makes a point about the past and present of such studies, anticipating possible developments for the future.

Collapse or resilience? Archaeology, Metaphor and Global Warming by Orri Vésteinsson is a thought-provoking paper that questions the use/abuse of the specific terminology of collapse and resilience in human societies and addressing the necessity to usefully revise our concepts for the interpretation of archaeological evidence.

In *On Rivers, Mountains, Seas and Ideas or What Vast Spaces and Long Lines Mean to Culture and History* Carsten Paludan-Müller proposes a renewed approach to the concept of Europe inspired by geopolitical analyses and international relations theory in order to explore lines of development and logic between the past and the present.

Two papers in particular, but deriving from two completely different contexts, explore the connection between archaeology, history and cultural identity and political narratives. *Theoria est ancilla rationis politicae? The Neolithic Revolution in Archaeological Research of Socialist Hungary* by Eszter Bánffy discusses the power of interpretation based on the contemporary Zeitgeist that may supersede in different ways, equally worryingly, the objectivity of the archaeological data. *Venezuela: revolution, history and cultural identity* by Irida Vargas Arenas and Mario Sanoja Obediente indeed does not really deal with archaeology, but rather with issues of social solidarity, cooperation and collective participation in communitarian self-government as a means for building a humanistic and democratic future in Venezuela.

Fredrik Fahlander's *Sherlock against Lestrade: a study in scale* by addresses the necessity to use bottom-up strategies in the interpretation of the past, since the attention to the particular represents an informative starting point for the exploration of the general, while the other way around has implicit risks of simplifying social complexity.

This section ends with the stimulating essay by Michael Shanks, *Archaeology in the Making: the Human Face of Pasts-in-the-Present*, who provocatively rejects most of the current practices of archaeology in order to promote an approach that focuses upon the ontology of our relations with the past and upon the possibility of building bridges between the past and the present.

Practices of Archaeology

This section contains essays dealing with a broad spectrum of practices within archaeology from chronology to laser scanning, and from travelling to fieldwork, and their significance as to the interpretation of the past.

Time traveller: Montelius and the British Bronze Age after 100 Years by Richard Bradley opens the section with reflections on the accuracy of the chronological observations for the British Bronze Age by the Swedish archaeologist Oscar Montelius. Indeed, the parameters set by Montelius find confirmation, even a century later, and following myriad studies and new evidence with which to work.

Ola Wolfhechel Jensen and Åsa Jensen take us back to Scandinavia, in order to explore the difficulties and challenges that early Swedish archaeologists had to face in order to map and study the national heritage in *Antiquarianism Reconsidered: Semi-Professional Antiquarians and Antiquarian Field Practice in Sweden in the Sixteenth and Early Seventeenth Centuries*. A similar theme, but situated in the second half of the twentieth century on the verge of the Cold War, is touched upon in *Visiting Museums - a Personal Story* by Lise Bender Jørgensen. Her fascinating account, while uniquely personal, no doubt triggers fond memories for all those archaeologists who have travelled in order to collect information and data.

Two papers, both dealing with the Italian peninsula, exemplify the practice of archaeology and study of landscape, one relating to underwater research and the other in a mountainous setting. Both are examples of essays that could also

have been discussed in other sections as well. In *Reflections and Hypotheses on Underwater Prehistory in Central Mediterranean* Sebastiano Tusa discusses in the light of modern methods of underwater research, the necessity to reconsider changes of the sea-level in the Mediterranean during prehistory in order to provide the proper geographical scenario for phenomena which appear otherwise very difficult to understand. The subsequent paper, *Tales from the Beech Forest: Laser Scanning Project at Monte Cimino (Italy)* Hillfort written by Serena Sabatini, Christopher Sevara, Martin Fera, Jakob Kainz and Petra Schneidhofer, presents the first results of a newly begun interdisciplinary project in which the focus at this early stage has been on terrain modelling through airborne laser scanning. The quantity and quality of the information gained with this analytical method is well-suited to the heavily wooded site of Monte Cimino, a better understanding of which promises to contribute to the debate on the proto-urbanization phenomenon on the Italian peninsula at the end of the second millennium BC.

From Italy to Scandinavia, *Construction Archaeology, Fieldwork and Theory* by Marianne Lönn and Håkan Pettersson approaches the very interesting issue of the role of the field archaeologist as a medium between the materiality of the archaeological evidence and its theoretical interpretation. With several enlightening examples they show the vital role of field experience in understanding actual features on the ground prior to any theoretical interpretation.

The section concludes with two papers both dealing with the Danish archaeological heritage. In *Restoration of Megalithic Tombs in Denmark*, Torben Dehn, Svend Illum Hansen and Jørgen Westphal discuss not only achievements in the management and knowledge of the megalithic tombs in Denmark, but also provide yet another concrete example of the significant role that Kristian has had in the study and preservation of archaeological heritage. The same can be said for the article by Jette Bang. Her essay *The Route to a History of the Cultural Landscape: A Danish Record Of Prehistoric and Historic Roads, Tracks and Related Structures* relates the information gained through the recording and preservation of ancient roads, which was initiated in Denmark thanks to the campaigns launched by Kristian Kristiansen in his role as head of the former Division of Cultural History of the National Forest and Nature Agency.

Heritage studies

It might be considered somewhat of an afterthought to place a section on heritage studies at the end of the book, given the significant part this has played in Kristian's career and his personal commitment to the subject. However, there is no order of importance in the various sections, and it seems appropriate to close with a topic that won him the European Archaeological Heritage Prize in 2005 and which encompasses issues in his current academic work.

Cultural Heritage: Values and Ownership by Zbigniew Kobylinski provides a significant discussion on the meaning of heritage and the increasing problem of ownership of cultural heritage, particularly in areas of conflict. The author proposes the principle of free access to heritage in order to address and solve potential conflicts.



Fig. 2 Midsummer celebration in Salemi, Sicily. Photo: Lotte Hedeager.

Anita Synnøstvedt and Maria Persson transport the reader to western Sweden and discuss the difficulties and successful strategies in a new approach to the local heritage in the paper *The Management of Heritage Sites– in Need of a Vital Spark?*.

From Nuclear Missile hangar to Pigsty: an Archaeological Photo-Essay on the 1962 World Crisis by Mats Burström, Anders Gustafsson and Håkan Karlsson is the outcome of a project on modern heritage. The photo essay visually unveils the impact that heritage can have on everyday life after just a few decades from its original use and significance.

Heritage Futures and the Future of Heritage by Cornelius Holtorf and Anders Höglberg problematizes issues of preservation, selection and our responsibility in the present towards future generations.

The section concludes with John Carman's insightful contribution, *A Heritage of Conflict, and Conflicts of Heritage*. He also approaches issues of preservation and transformation of heritage, but in contrast to the previous essay this is done from the perspective of its destruction and abandonment and the relevance this has in heritage studies.

Wrapping up

The last article in this book is definitely not the least. The idea to include it has been a carefully guarded secret, cloaked in mystery one might say, since the outset of the project, and it is hoped that it might be the biggest surprise of the festschrift - and yet it is probably the most familiar text of all as far as Kristian is concerned. Indeed, there cannot be many who can claim to have contributed to their own festschrift! According to Kristian, it was his only article that was refused for publication. We thought it high time to right this wrong. The original from which the present article has been translated is a manuscript from 1975 written in Danish (*Dragt- og smykseskik i Nordens bronzealder*). It was translated into English by Sophie Bergerbrant (*Female Clothing and Jewellery in the Nordic Bronze Age*). Kristian might have wished to update some parts of it, but we regard the piece as significant in its own right and as a document of time, and we are convinced that this is the most fitting way to wrap up a book whose aim it is to celebrate Kristian's 65th birthday and his exceptional career. It is a collection of essays from colleagues and students, both former and present, each of whom has appreciated Kristian's friendship, scientific collaboration and inspiring approach, or has simply found his work profoundly influential in some way.

Sophie Bergerbrant and Serena Sabatini



Fig. 3 Anders Gustavsson and Kristian Kristiansen playing at the EAA party in the Hague (2010). Photo Sophie Bergerbrant.

KRISTIAN KRISTIANSEN BIBLIOGRAPHY

Kristian Kristiansen is a prolific writer. Compiling a comprehensive list of his work has therefore been a challenging and enlightening task. Kristian's vast output has included a wide range of topics within archaeology and cultural heritage studies, and is spread across a large number of international media as well as official and governmental publications. He has written in Danish, English and German, and in addition to this his work has also been translated into French, Portuguese and Spanish.

This compilation lists almost 200 published works by Kristian Kristiansen. Most certainly, there must be some that have fallen through the cracks, and it was unrealistic to compile a full listing of book reviews, so these are generally absent. However, this bibliography contains the overwhelming majority of Kristian's publications.

The bibliography has been divided into five paragraphs, one for each decade of Kristian's long and fruitful career. In each paragraph books and reports are listed first, then scientific articles. Within each year, there is no specific order for the given publications.

Serena Sabatini

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BEYOND ACADEMIA

FAMILY LIFE

Niels Hedeager Kristiansen

What was it like to grow up with not one, but two archaeologists (Kristian and Lotte), from the vantage point of a kid, teenager, student and now finally a young professional in the field of business? Instead of asking my mother to contribute to this volume, the editors wanted a personal statement from me as the single child in this family of archaeologists. Although I never saw this as anything special, I will do my best to try to recall *how* it really was.

Quite early on I realized my parents' shared interest in the field of archaeology. I remember noticing the common passion they shared in their work, always discussing the latest research, sharing ideas; providing each other with help and advice. I recall quite clearly as just a child how it made me want to find a spouse later in life who would be in my own field of work, as I saw how they were both best friends personally, as well as professionally, and it just worked beautifully.

However, I also noticed what I viewed as the downsides at the time, such as dinners rapidly turning into archaeological

discussions. However, kids have an amazing ability to adapt, and I quickly learned to filter out 'the noise', and politely ask if I could leave the table and go play instead, which I could once I had finished my dinner (and my salad, which they would always insist on). Often I would hear the conversation continue for hours after I had left the dinner table, so when I would come back down to the kitchen or the dining room to get a snack or a drink, they were often still sitting by the dinner table, a bottle of red wine later, deeply engaged in conversation. The same procedure occurred during the countless dinners with friends and colleagues from all over the world that would come to our flat in Copenhagen, and later in our home in Hindås. However, I remember trying – and sometimes succeeding – to engage our guests actively in play, by inviting them into my tent in the living room to play (at a very young age), or involving them in my various games growing up. Consequently, I both got relatively good at English at a young age, and met those I am proud to call my 'extended family', who I always look forward visiting in either Sweden, or when I travel through Chicago, Palo Alto, Boston and other places.

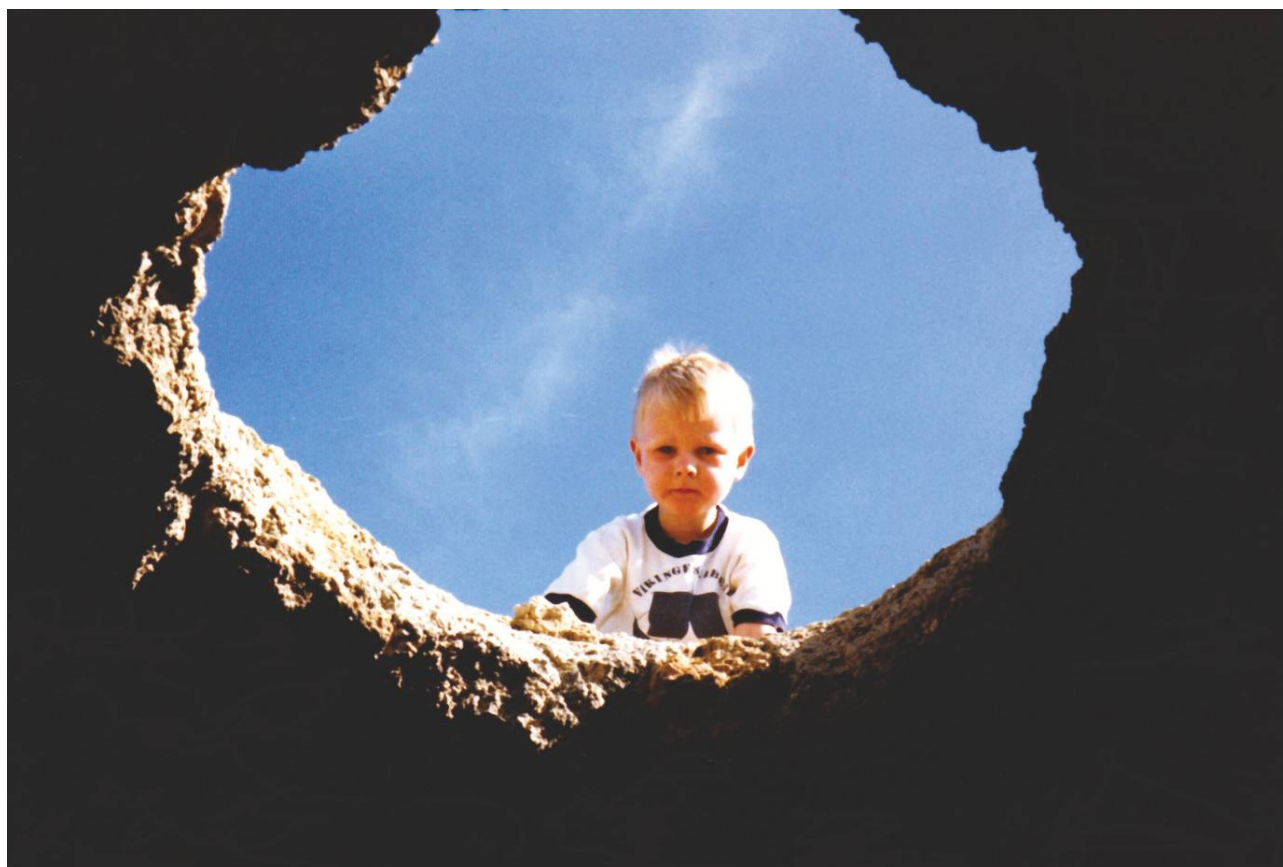


Fig. 1 The author in southern Spain looking into a Megalithic monument. Photo: Lotte Hedeager.



Fig. 2 The family at the EAA meeting in Santiago de Compostela 1995.

Growing up, Kristian and Lotte always brought me along on their trips, perhaps partly because I was the only child and they wanted to spend as much time as possible with me, which I naturally really enjoyed immensely. Consequently, by the time I started high school, I had travelled more than anyone that I knew that was my own age. I truly believe that this was a major factor in shaping my passion for travelling and exploring new cultures. I remember Kristian would go on various excavations and conferences all over the world, always telling me how important it is to get out and plug into the latest that is happening within your field to stay current, sharp and creative.

I vividly remember our travels together as joyous occasions, either just Kristian and me, travelling on our own, or the whole family together. Lotte and Kristian always struck a good balance of not only doing archaeological ‘stuff’, but also things that I would enjoy, such as not going to every museum in a twenty mile radius. However, I can spot a chair (or any sort of seating arrangement) quicker than anyone when entering a new museum room; a skill I quickly developed somehow.

Funnily enough, that means that I will often go to one or two museums when I travel to a new city on my own nowadays, otherwise it just does not feel right for some reason. I am, however, deeply grateful that they shared their passion for travelling with me, meeting people and exploring all the cultures of the world, either current or past. Some of my fondest memories are from the many EAA meetings, and pre-meetings, in Europe. In Paris we stayed at Maison Suger when Kristian was a visiting professor

at the Sorbonne and where Michael Shanks would always show me the latest IT gadgets (in addition I learned to love the French cuisine), and my first excavation with Kristian, Tim Earle, Jens Henrik Beck and John Steinberg in Thy, Denmark where John would always prepare American hash browns each night for breakfast the next morning, and Tim became infamous (still!) for saying “we’re outta here”, at which point he would drive off with any students who were not late that morning. During my late teens and early twenties we also had a tradition of joining Kristian in Rome for his yearly project meeting. Travelling with Kristian started meaning more and more to me, as I would also get a chance to see people who were now also my friends, at excavations, at meetings and at the conferences, and I loved it. Even in my twenties we all went to both Stanford and Oxford, and lived together as a family, and it was wonderful.

I think one of the biggest decisions that we made as a family was whether we should move from Copenhagen, Denmark to Gothenburg, Sweden when Kristian received an offer to become professor and move back into academia from his job in the Danish Archaeological Heritage administration. At that point I was ten, and was in the second grade.

I find it interesting how children can sense things happening around them, without necessarily understanding the situation they are in to any great extent. I recall noticing that Kristian and Lotte were feeling that things in Copenhagen were not working so well any longer. Kristian was reaching a point of being overworked, and Lotte was a bit stuck in her work. It just felt that it was



Fig. 3 The family in 2011 near their summer house. Photo: Douglas Price.

time to close this chapter of our lives, and move on to the next adventure...so we decided, as a family, to pack our things and move - truth be told, I was bribed with a new bike and the promise of our family buying a big new Volvo!

Not realizing it then, I today strongly admire them for understanding that our family would benefit from a significant change, and being willing to risk today for a better tomorrow. In the field of business we talk about how increasing your risk, also increases your potential reward, which was what we did, and it was worth every second of it. From a practical point of view, it made me bilingual in Danish and Swedish; it increased my number of friends, and made our family significantly happier.

Another big change was when Lotte received an offer to become professor in Oslo, within a few years after us moving to Sweden. Before that, I was closer with Lotte than I was with Kristian (partly as he was often away travelling). Her going to Oslo meant that she would be gone every second week. At the time I hated it, but what it really did was bring Kristian and me much closer. In retrospect, it was the best thing that could have ever happened, making our family much more balanced. An added benefit was that Kristian and I learned to survive on our own.

During my teenage years, a big part of growing up was spending my summers together with Kristian in Sicily, a total of seven summers, beginning in 1997 and ending in 2006. Last summer (2011) Kristian and I went back for a week with Christian Mühlenbock, who has had such a big part of making the excavation a success, and it somehow felt like coming home. Having grown up in a home of travelling and exploration, today

means that 'home' is many places to me. Home is in Copenhagen, Gothenburg, Salemi, Cambridge, Oxford, Palo Alto, Boston and Ann Arbor

I would now like to shift gears slightly, and focus on what I have observed in Kristian, specifically in terms of personal characteristics. Early on, I was particularly impressed by what a natural and effective communicator Kristian is. He is always ready to stand up in front of a group, and will inherently know exactly what to say. A fun example of his communication skills that comes to mind is from Sicily. He managed to make a deal with the local Sicilian government officials to start a project there although he does not speak a word of Italian, and they often did not speak English. It was so funny to watch them communicate through hand signs, gestures and sounds on several occasions, and I began realizing why Kristian is so great at working with people: everything he does comes from a place of goodness, sincerity and mutual interests. People like him, I believe, for his honesty, ethics, sincerity and willingness to 'think outside the box'.

Secondly, I noticed his creativity and persistence when he gets an idea. One example that does not do this statement justice, but that I personally find hilarious, was the day he managed to get a bulldozer transported all the way to the top of the hilltop of Monte Polizzo in Sicily where we were excavating, since there were simply too many layers of dirt above what we were looking for. The neighbouring hilltop was excavated by Ian Morris from Stanford and his enormous group of students, and I still vividly remember the look on the students' faces when I walked up to their dig sharing their view of the bulldozer full at work on the other

hilltop with Kristian pointing to where he wanted it to dig in the 40° C (100° F+) sun.

Applying my observations beyond the context of Sicily, Kristian is not afraid of bending rules and norms if he believes that they are wrong, preventing good. I personally think this is a critical skill to possess, also in my own field of business. Overarching rules and methods are not always best suited to deal with special situations that will naturally arise in any organization. I can personally think of several, what I would define as life/career altering situations, where the willingness of a senior leader (a champion if you will) to use his or her weight and reputation to bend the rules slightly to achieve a more individualized and better solution. Kristian is in my opinion that sort of champion for many people, as he is not afraid to throw all of his weight behind someone, or something, if he believes that it is the right thing to do. That liberal sense of not feeling overly constrained by norms is something that I admire tremendously.

Finally, ending on a playful note, Kristian has always had a great sense of celebrating properly and having fun. He is just great at making sure that work is combined with having a good time, and understands how much better people work together when there is

also time to blow off steam, and get to know each other outside of work. In Sicily we had a yearly Swedish midsummer party where we would invite local friends and authorities to join us celebrating in the traditional manner with herrings and schnapps imported from Sweden and an improvised Midsummer-pool decked out with flowers; they loved it, and we loved it, too! Our introduction of this local tradition was, in my opinion, pivotal in establishing the bond with the local leaders and community, who became not just good colleagues, but friends. And what is more fun than to work with friends?

In conclusion, Kristian has taught me the importance of collaboration, dedication and generosity, and not least the importance of friendships. I believe that this book in his honour confirms just how successful he has been in making, and maintaining, both new and long-lasting friends throughout his life. I feel so blessed to have such wonderful parents, and to be a part of this distinguished group celebrating Kristian on his 65th birthday.

Kristian, happy birthday - buon compleanno - bon anniversaire - grattis på födelsedagen - tillykke med fødselsdagen!

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SIX PERIODIC ENCOUNTERS WITH KRISTIAN KRISTIANSEN

Joakim Goldhahn

Abstract: This essay presents six personal encounters with Kristian Kristiansen from the early 1990s until today. The encounters stretch from the dawn of time when I was a young student throughout my career as an archaeologist involved in rock art and Bronze Age research in Northern Europe. I also present some thoughts about the inimitable personal qualities that make Kristian such an influential archaeologist, colleague and friend.

Keyword: Kristian Kristiansen

Introduction

It is probably inevitable that an archaeologist who works in Northern Europe (and elsewhere) will get acquainted with Kristian Kristiansen and his influential archaeological research. Through his creativity and charisma, his long and profound Bronze Age research, his engagement in the history of archaeology and heritage studies, his successful archaeological projects and, not least, his interest in archaeological models and theoretical frameworks, Kristian has made a lasting impact on European archaeology.

Kristian is a visionary archaeologist who wants to set the agenda. This often leads colleagues to assert mixed feelings of scepticism, astonishment and admiration when his research is discussed. When Kristian launches some of his new and daring perspectives, colleagues often express their doubts about his big, sometimes with capitals, sweeping pictures, but it is not always because they have managed to formulate and present some alternative hypothesis or interpretation. When the worst storms have faded away, it is not uncommon to find frequent references or, more often, notable influences from Kristian's pen, in the work of his former opponents.

It should immediately be acknowledged that I sometimes joined this critical crowd. More than once I have openly declared myself critical to some of Kristian's, in my opinion, too farfetched explanations. Despite this, our disagreements have never come in the way for our frank, critical and constructive discussions that have always been held with fervour, respect, and, most importantly, a sense of humour.

Period I

My first encounter with Kristian was as a young student in 1989 when I started to read archaeology at Umeå University in northern Sweden. Already during the first semester we discussed his research on the North European Bronze Age. My first archaeological department was an exciting mix of orthodox new archaeologists, who followed in the footsteps of Big Lew¹ and tried to 'chase the productive forces' and figure out how many calories it was possible to gain from one single moose, and structural Marxists who wanted to study ancient societal changes from a long-term perspective. Maurice Bloch's *Marxism and anthropology* from 1983 was one of the most important theoretical building blocks of our literature. Ten weeks into the first semester,

we were strictly informed that "now is the time to take a stand and choose if you are an idealist (*false!*), or a materialist (*true!*)".

Our lecturer on Scandinavian Bronze Age was Thomas B Larsson. He was well acquainted with Kristian though he had been the opponent for his PhD (Larsson 1986). Several of Kristian's influential papers were included in our extensive reading list of obligatory literature. They were generously handed out in the form of photocopies. The articles had been reproduced so many times that it was difficult to see what the figures depicted. Sometimes, even the text was difficult to read. However, we were happy to find that Kristian always summarized his conclusions in models and flow charts that sometimes seemed just as difficult to understand as all the artefacts that we, with varying success, tried to learn the names and ages of.

Kristian belongs to another archaeological generation than I. He established himself as a leading Scandinavian Bronze Age scholar during the 1970s, mainly through his source critical analysis of Danish hoards from the Late Bronze Age (Kristiansen 1974a, 1974b). He won a gold medal for his innovative research at Aarhus University in 1975 (see also Sørensen this volume). He also wrote some much discussed papers (Kristiansen 1978a, 1978b), especially the seminal *The Consumption of Wealth in Bronze Age Denmark* from 1979. Later I learned that it was this article that led to his international reputation. The articles included in our Bronze Age course back in 1989 was *The Formation of Tribal Systems in Later European Prehistory: Northern Europe, 4000–500 BC* from 1982, and, not surprisingly, *Ideology and Material Culture. An Archaeological Perspective* from 1984. From my notes, which I still have, I see that I particularly appreciated the long-term perspectives and how Kristian, in an uncomplicated way, was able to describe complicated cultural transformations in the past so it all became comprehensible.

Period II

My second encounter with the archaeological legacy of Kristian went more unnoticed to begin with. During my second year as a student I went to my first archaeological conference at Møn, an island located south-east of Zealand in Denmark. This *Kontaktseminarium* was organized by *Fællesnordiskt Råd for Arkeologistudenter* (FRA), the common council for Nordic students in archaeology. To be honest, it was the party and the possibility of being seduced by some Danish or Norwegian students that were our main aims with the trip, but it was impossible not to be drawn into the often high and intense discussions about the future of archaeology.

¹ Editors comment: Lewis Binford 1930–2011

The *Kontaktseminars* were not only an opportunity to discuss the pros and cons of the current archaeological discipline; they were also a melting pot between different archaeological traditions. By this time, Norwegian and Swedish archaeologists had just begun to embrace the post-processual archaeology (see Olsen 1987; Burström 1989), a movement that I soon came to join. It all started when I was given the task of reviewing Ian Hodder's classic book *Symbols in Action* (1982) in a seminar. It made me realize that the explanation of social processes in the past that the new archaeology and structural Marxists advocated was not so obvious and straightforward. The material culture was not a passive reflection of the past; rather, it was an active medium that was once used to shape an alternative future. The more I got acquainted with archaeological theory, Shanks and Tilley's (1987) *Re-constructing archaeology* was especially influential for me, the more obvious it became that the archaeological science ought to be rewritten from singular to plural. The unknown archaeological landscapes that I had begun to embrace were clearly demonstrated in the meeting with my fellow Nordic students. My burgeoning post-processual ambitions stood in sharp contrast to what I observed in Danish students, who were very empirically oriented. The archaeological interpretations of Kristian's first mentors, such as Johannes Brøndsted, Carl Johan Becker and Peter Vilhelm Glob, were still doxa. Those who tried to make use of theoretical models mainly followed more traditional processualists such as Klavs Randsborg and Henrik Thrane. Kristian's structural Marxism was considered too daring and challenging for the establishment who held a firm grip on their students. Our Finnish friends maintained a traditional culture-historical approach that was outlined by Ella Kivikoski. As always, exceptions confirm the rule.

Aside from the great parties, lectures, discussions and memorable excursions, it was the encounters with fellow students which are the strongest impressions from my involvement in FRA. Some of us became friends for life. The more I became involved in FRA, the more I came to learn about its history. When I took over as the secretary for the organisation for a few years in the 1990s, I got hold of FRA's archives that stretched back to the founding meeting in Aarhus in Denmark 1969. One of the initiators of this joint Nordic organization for archaeological students was Kristian. The explicit goal for the organization was in line with the demands of the illustrious generation of '68. They wanted to break the inherited patriarchal power structures that were so deeply rooted at the archaeological institutions in the Nordic countries. They wanted to reform the content and structure of the education. They wanted to make the archaeological discipline theoretically informed and more in pace with current society. FRA aimed to create a new engendered archaeology (Goldhahn 1999).

The visionary organizer

Kristian was one out of many founders of FRA and it can be seen as one of many examples of his prodigious organizational skills. After working as a field archaeologist and researcher between 1975 and 1979, this ability became useful when he was appointed *Director for the Danish Heritage Management*, a post he held until 1994. Here he launched a number of successful archaeological projects, such as the restoration of megalithic monuments (see Dehn et al this volume), et cetera, and he led a total reorganization of the department. For this achievement and his contribution towards redesigning the Danish heritage sector, the Danish queen knighted Kristian to *Knight of Danebrog* in 1985.

When Kristian and his fellow students who started FRA advanced in their careers and outgrew the *Kontaktseminar* they

found themselves in limbo. The annual meetings of Nordic archaeologists were considered too dull and traditional, not least since the establishment that they once revolted against still controlled these gatherings. The solution was to establish a Scandinavian equivalent of the British Theoretical Archaeological Group, Nordic-TAG. The first meeting was held in Helsingør in Denmark in 1985 and the strongest driving force behind this new organization was Kristian (Kristiansen 1987a, 2012).

The same year, Kristian co-founded the first multi-disciplinary *Humanistic Research Centre* at Copenhagen University. This centre ran until 1990, and it became a stronghold for several prominent Danish archaeologists and researchers, such as Mogens Trolle Larsen, Jørgen Jensen, and, not least – Lotte Hedeager; all prominent researchers with a vast international network (see Rowlands et al. 1987; Kristiansen & Jensen 1994).

Kristian was just warming up. When the phase at the *Humanistic Research Centre* came to an end, the Nordic scene became too small. Within a short time we find Kristian as one of the co-founders of the *European Association of Archaeologists* (EAA). The organization's founding meeting was held in Ljubljana in Slovenia in 1994, and EAA's first annual meeting was held in Santiago de Compostela in 1995 (see Novakovic this volume; Willems this volume). Kristian was elected to EAA's first president, a position he held until 1998. In 1999 he was acclaimed for his efforts by the organization that appointed him an *Honorary Fellow*, and in 2005 his achievements and work on cultural heritage issues led to him being awarded the *European Archaeological Heritage Prize*.

Period III

My third encounter with Kristian was also the first time we got personally acquainted with each other. It was in 1995 in Visby, on the Baltic island Gotland, at a Bronze Age seminar designed for young Bronze Age researchers in Sweden. Kristian, who had just been appointed to the Professor Chair in Archaeology at Göteborg University (1994), was invited by the organizers to provide comments and perspectives on our research in progress. With my heart pounding I presented a paper on the Bronze Age in south-east Scania in southern Sweden. I do not remember much of the discussions that followed. However, I do remember that Kristian and I had a lively natter about the dating and interpretation of the famous Kivik cairn over a beer or two one evening (Fig. 1). Klavs Randsborg's (1993) study of Kivik had just been published and I remembered a footnote in one of Kristian's articles where he proposed an earlier dating of this well-known decorated cist with rock engravings.¹ Randsborg had dated Bredarör to around 1300 cal BC, to the transition between period II and III, while Kristian thought it was 200 years older and ought to be dated to the end of Period I, about 1500 cal BC. We had a long discussion about this (cf. Goldhahn 2009), and since then we have continued to discuss these precious issues whenever and wherever we meet.

Kristian was not alone in Visby. He also brought with him his son, Niels. While Kristian discussed the Bronze Age chiefs and warriors with enthusiasm, Niels was occupied drawing sketches of war battles and listening to music. During the coffee and lunch breaks, they ran around and played. It was obvious that they had a close and sound relationship and that both of them loved spending time with each other. At the time I was a father of a two-year-old child and with a second on the way, and I felt it was encouraging to see that it was possible to combine being an active parent and

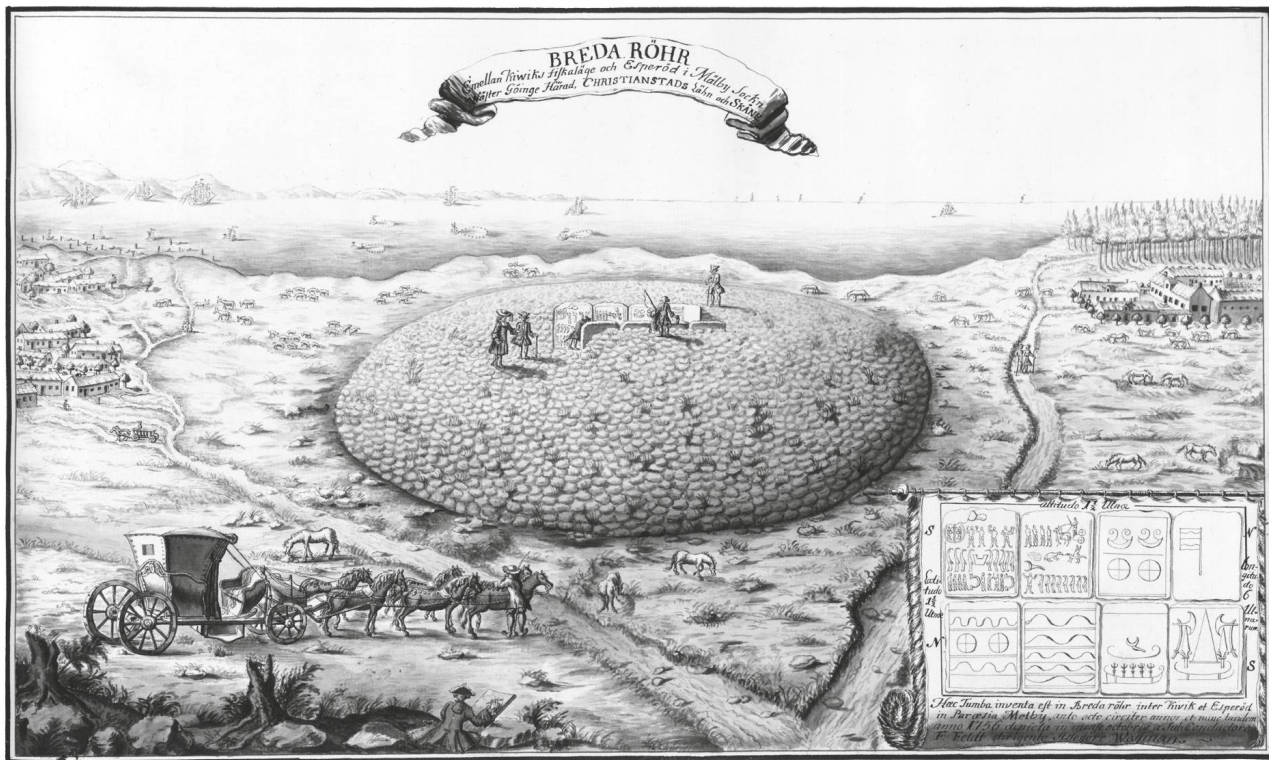


Fig.1 Bredarör on Kivik – the famous Kivik Cairn – a contested monument with rock engravings from the Middle Bronze Age, circa 14th century cal BC. Gustaf Fredrich Feldt's documentation of Wessman's visit to Bredarör in 1756.

having an academic career; or as Kristian told me: “you just have to see the possibilities”.

I had merely returned home from Visby before I discovered one of Kristian's most striking qualities as a researcher and as a person – his generosity and will to share his knowledge. Within a few days after I returned to Umeå, I found a large envelope full of offprints of, more or less, all major articles that Kristian had published on the Bronze Age. Later I learned that this was one of his main strategies to create and maintain his vast academic network; for as he once remarked: “Joakim, you have to send *all* your papers to *all* Bronze Age researcher out there, otherwise they will not know that you exist”. After a while I also learned that it is more than likely that you will receive the same offprints more than twice from Kristian, a habit that many of my students appreciate. I keep a hoard at my office at Linnæus University.

To put Göteborg on the map

During the following years, Kristian and I came to see each other more often, mainly because I became a more frequent visitor to seminars and conferences. Kristian defended his Dr Phil in 1998 at Aarhus University with his thesis *Europe before History*. Meanwhile, his progressive work at the department in Göteborg started to show results. The institute arranged the Nordic-Tag in 1997 and EAA's Annual Meeting in 1998, strategic events that put the archaeological department in Göteborg on the map. Within a short time, this progressive work was manifested and materialized in a number of thought-provoking theses. If we look at the number of publications from the department over time, one of Kristian's favourite analyses, the ‘Kristian-Impact’ is apparent (Fig. 2). The decade before Kristian became a professor, between 1984 and 1993, there were very few PhD dissertations that were

completed, only three theses (0.3 per year). The number of other archaeological publications were few, nine (0.9 per year), and it was mainly reports from the department's excavations that were published. The difference after Kristian was appointed to professor is significant. During his first ten years as a professor, from 1994 to 2003, no less than 23 theses were defended and published (2.3 a year). The number of other archaeological publications were substantial, 37 pieces (3.7 per year), while the number of archaeological reports decreased (Fig. 2). A peak was reached in 2004 and 2005, when no less than 12 theses were completed and published within two years. Since then, the number of theses has slightly gone down, which can be explained in part by changing rules for obtaining funding for PhD-studies at Swedish universities.

It is interesting to compare these numbers with Kristian's printed works during the same period. At the beginning, the number of publications was modest, his time and energy was better spent encouraging and supporting PhD-students to finish their theses, to initiate new research projects, and to get the department in Göteborg up and running. Since the new millennium, his publications have increased. A peak can be seen between 2004 and 2006 with 17 publications in three years. The summit was reached in 2010 with eleven publications (Fig. 2).

Period IV

One of my more memorable encounters with Kristian during these years, the fourth, was during the *Nordic Archeological Meeting* in Umeå 1998 (Swe. *Nordiska Arkeologmötet*). We came to sit next to each other and during the coffee break Kristian gladly explained to me that he had not found time to prepare his paper for the conference. During the presentation before his own, I watched

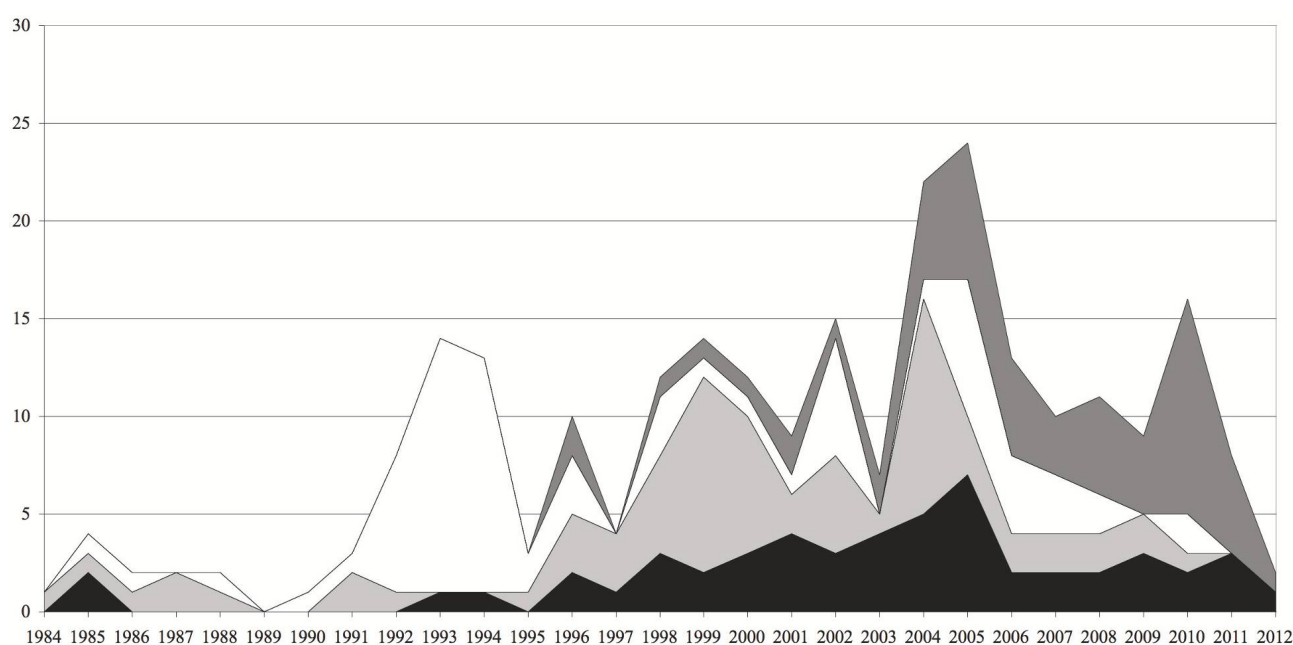


Fig. 2 A tentative graph showing the number of published theses (black), other archaeological publications (light grey), and reports (white) at the archaeological department in Göteborg between 1984 and 2012. Kristian's published work from 1994 to the present is also highlighted (dark grey). Source: the Gotarc Series, www.gu.se.

him with an admirable calm complete his presentation in the form of a few supporting points and by drawing some figures for the presentation by freehand on overhead sheets. Everything was done in a jiffy. During his obviously spontaneous and improvised paper, Kristian hammered out many of the theoretical perspectives that he has been busy exploring during the new millennium (Fig. 3). The model and the essence of his presentation were published the year after in a re-worked paper in the Festschrift for his colleague in Göteborg, Jarl Nordbladh (Kristiansen 1999).

It was during this visit to Umeå that Thomas B. Larsson and Kristian decided to co-write their seminal work *The Rise of Bronze Age Society. Travels, Transmission and Transformation* (2005). They both shared a common research interest that aimed to capture a bigger picture of the European Bronze Age (see Kristiansen 1998, 1999; Larsson 1999). The decision to write the book was reached during a small, private, long and memorable dinner at Larsson's and Britta Lindgren's home in Robertfors. The discussions during the dinner were intense; high flying, thought-provoking theories were thrown into the air, some were better, some worse, and soon books were covering our dinner table. Kristian sketched model after model on his serviettes, Larsson's stepdaughter, Frida Hyvönen, was playing her latest songs at the piano (it was the only time when the discussions stopped, see www.fridahyvonen.com), and a great new master plan for the European Bronze Age was created. How Kristian and Thomas actually came to the conclusion that they *just must write just that book together* is another story that I will save for my autobiography.

Period V

After defending my PhD at Umeå University in 2000, I worked as a lecturer at Lund University for two years. Teaching and tutoring took up all my waking hours, and even more sometimes. I was teaching almost two full first year semesters in parallel. On top of

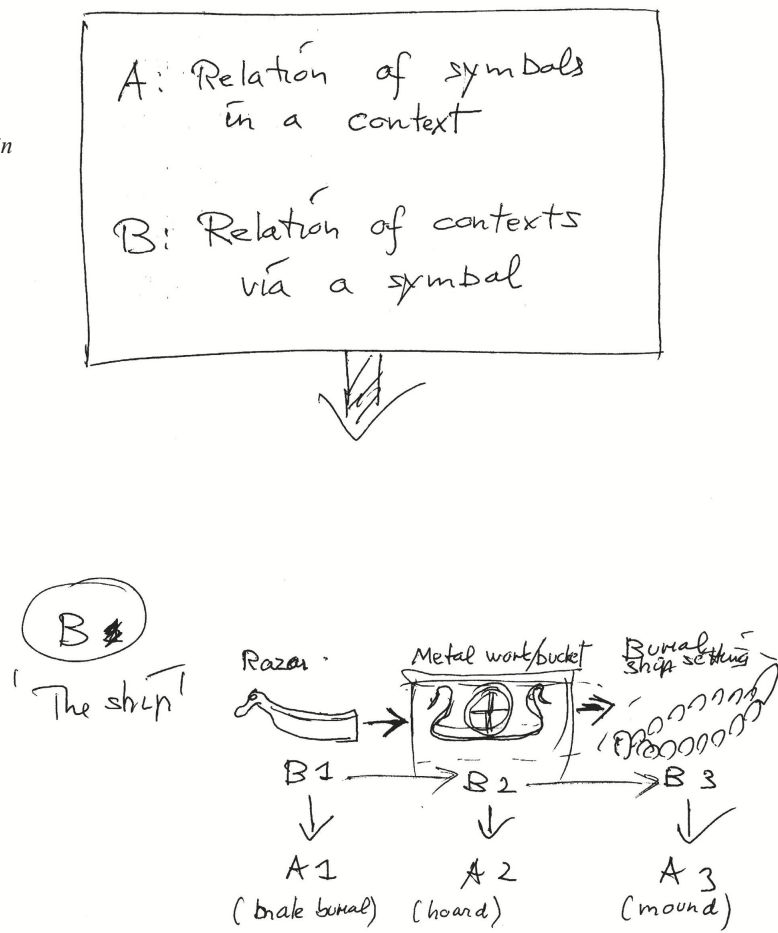
that, I was the tutor for a handful MA-theses, a further education course for museum staff, and taught an introductory course in archaeology designed for the public. Despite this, I managed to present some papers at seminars and conferences, but, perhaps not surprisingly, I did not find the time to initiate any new research.

The archaeological department in Lund was very well organized. Everything had its place. The spirit of professor emeritus Berta Stjernquist was still evident. The well-oiled administration worked flawlessly. Some of the syllabuses for the courses I was responsible for had not been changed since the early 1970s, for over thirty years. There were attendants to use if you needed anything to be copied, photographers and artists to call in from the museum if you needed to produce a new photo of an artefact, figures, tables or maps. In the unlikely scenario that you had any questions there were always experienced archaeologists to ask for advice. The only thing that surprised me then, a strange feeling that still lingers on, was that there were so few staff members who seemed eager to discuss and debate their ongoing research (as before, exceptions confirm the rule). It was as if all discoveries were already made, all boundaries were drawn, all thoughts thought; it was as if everyone knew what they would do for the rest of their lives.

The famed 'post-doctoral depression' pulled closer. In the darkest hour, in late spring 2002, I was reached by the more than welcome news that I had received a four-year externally funded research project sponsored by the *Swedish Research Council*. It was like manna from heaven. Finally I would get time to take up my own research again, *funded for four long years*.

For various reasons, including Kristian's stimulating Bronze Age research, my position was assigned to Göteborg University, the fifth encounter, where I stayed until my project was finished in 2006. Here I found a completely different atmosphere from that in Lund. If the latter institution was characterized by calm administrative arrangements, as an already fixed cosmos, the

Fig. 3 A model for 'Interpretative strategies for tracing the meaning of symbolic contexts and institutions' that Kristian created for his lecture in Umeå 1998 (after Kristiansen 1999: 539).



department in Göteborg could best be described as a creative chaos in motion. Discussions, debates and seminars were priority number one. All employees, both established researchers, PhDs and even graduate students, seemed busy defining their own special kind of archaeology. This came in a variety of ways: as a contemplative archaeology, a borderline archaeology, as the archaeology of motherhood, biographies, archives, an archaeology of the contemporary past, or as a micro-archaeology, et cetera. The different kinds of archaeologies that were explored in Göteborg were often outnumbered by the number of archaeologists.

During these years, I came to develop a closer relationship with Kristian. Not that you saw that much of him at the institution, and when you did he was always on his way, on the move, to one of the countless meetings, or more often, to a conference out there in the big world. But when you *did* catch him, it often ended in challenging and provocative discussions about past and present Bronze Age research, Bredarör – always that Kivik cairn – and the enigma of rock art. We shared many dinners and we visited conferences, seminars and workshops together in Thessaloniki, Rome, Berlin, Cork, Tanum, Santiago de Compostela, Nämforsen, Lund, et cetera, et cetera, and, finally, on Kivik.

My time in Göteborg coincided with some of Kristian's most intense and productive years in his career (Fig. 2), so far. During this time he led the large EU-funded project *The Emergence of European Communities* that performed extensive comparative archaeological excavations in Tanum in Sweden, Százhalombatta in Hungary and at Monte Polizzo in Sicily (Earle & Kristiansen 2010). Much of his time was spent writing up *The Rise of Bronze Age Societies* (Kristiansen & Larsson 2005), which later received

the *Society of American Archaeology's International Book Prize* in 2007 (Fig. 4). Kristian was the main supervisor for over 30 PhD-students. Many of them were examined during the four years I was in Göteborg (all in all 21), whereupon the workload eased somewhat. In addition, Kristian was the prefect for the institute and thereby responsible for the department's finances, and he also managed to lead a total reorganization of the institution during these years. The wheels were spinning. Suddenly, out of the blue, Kristian's European project was hit by a terrible loss, the tragic sudden death of a dear colleague and friend. This stopped the wheel for a while, Kristian had to take some time off to reflect upon life and its inevitable end. I remember a train ride from Göteborg to Lund when we talked about the fragile threads of life, and what was most important to us: our family and loved ones, of course, but also the great pleasure of conducting thought-provoking archaeological research with people whose company you enjoy.

The archaeologist, colleague and friend

As an archaeologist, Kristian is open-minded, intuitive and daring. It is the great lines, *la longue durée* of prehistoric cultures – THE BIG PICTURE – that catches his interest and that he wants to explore (Kristiansen 1993, 1994, 1998; Kristiansen & Rowlands 1998; Kristiansen & Larsson 2005). His research and publications oscillate between historical flashbacks (Fischer & Kristiansen 2002; Kristiansen 2011a) and visionary outlooks (Kristiansen 1996, 2008a). He dares to go against the tide and he is always ready to start a debate about the interpretation of the past and current archaeological issues (see Kristiansen 1978a, 1978b, 1988, 1990, 1991, 2004c, 2005, 2008b, 2010a, 2011b for some



Fig. 4 September 2004, Thomas B Larsson and Kristian on an excursion to the rock art area at Campo Lameiro in Galicia, Spain, about a year before the release of *The Rise of Bronze Age Societies*. Photo: Joakim Goldhahn.

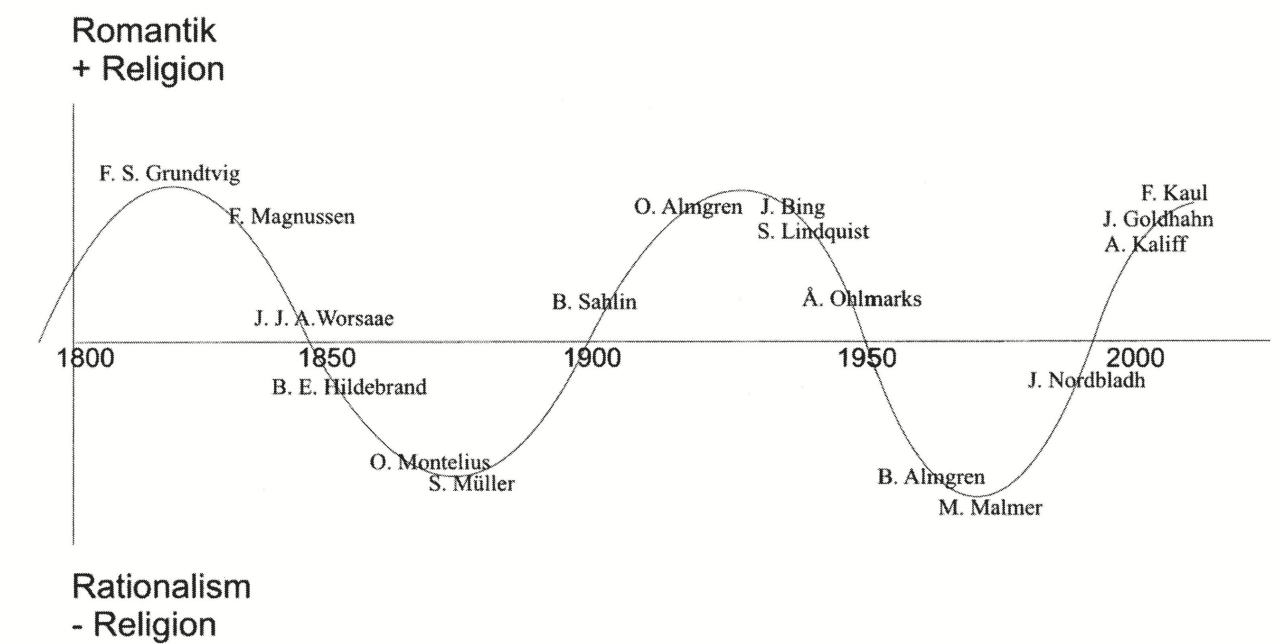
memorable critical comments on contemporary archaeological debates). He seems strangely pleased if his work is criticized, probably because this provides the opportunity to sharpen his arguments and develop new perspectives. More than once, indeed, it has been the criticism of his latest thesis that inspired further research.

For example, when his well-cited article *The Consumption of Wealth in Bronze Age Denmark* from 1979 was criticized in the early 1980s by Inge Bodilsen and others, who rejected Kristian's interpretation that the number of deposited bronze items could be understood as a direct reflection of the 'consumption' of bronze objects, he embraced and transformed the criticism to new challenging perspectives. Bodilsen (1984:18) wrote: 'If there is a lot of bronze, it will be offered, if there is only a small amount of bronze, there will be no offerings'. The pattern Kristian's analyses detected could not be interpreted in a 1:1 ratio; you also have to consider the impact of the ideology, Bodilsen argued. When this criticism was formulated, Kristian had already nuanced his earlier interpretation through use-wear analyses of bronze objects, and through his interest in source criticism (Kristiansen 1983, 1984b, 1985), but discussions like these always result in new directions in Kristian's research, such as the article *Ideology and Material Culture* (1984).

A more recent example is related to the enigmatic issue of the social structure during the Bronze Age. Everybody knows that

Kristian is one of the strongest advocates for the idea that a chiefdom-like society with an institutionalized hierarchy was established during the Middle Bronze Age in Northern Europe, about 1600 cal BC (Kristiansen 1987b; 1998, Kristiansen & Larsson 2005). This interpretation was challenged by Johansen et al. (2004) who suggested a less hierarchical social structure after an analysis of the spatial distribution of Bronze Age barrows on Jutland in Denmark. The criticism that was directed against Kristian (and others) was promptly answered, almost as a reflex (Kristiansen 2007, 2010a). Debates like this usually lead Kristian to reevaluate and re-think previous interpretations, but there are also some strong long-term interpretations and perspectives that he maintains with grace.

Kristian is always curious about the research projects being conducted by other archaeologists. He loves and embraces the possibilities for gathering archaeologists from different parts of Europe in grandiose archaeological projects, a delight that I think is grounded in his penchant for archaeological debates. It is in the crossfire between different archaeological generations, traditions and theoretical perspectives that Kristian thrives. In more than one way, his many archaeological projects seem an equivalent to Bob Dylan's never ending tour, though they have a strange tendency to merge and transform into new ones. *The Thy Archaeological Project*, which ran between 1990 and 1999 (Earle et al. 1998), can be seen as a prelude to *The Emergence of European Communities*, which ran between 1998 and 2006 (Earle & Kristiansen 2010).



Cyclical changes between Rationalism and Romanticism in archaeological/culture-historical interpretation, and the corresponding value (±) attached to religion.

Fig. 5 Model showing 'cyclical changes between Rationalism and Romanticism in archaeological/cultural historical interpretation, and the corresponding value (±) attached to religion' (after Kristiansen 2010b: 95).

These projects were the main inspirations for some of his current projects such as *Forging Identities* (www.forging-identities.com), and *The Swedish Rock Art Research Archives* in Göteborg and Tanum (www.shfa.se); projects that soon will be re-born in one form or another if we dare to learn from history. These projects have not only resulted in novel understandings about the European Bronze Age, they have also helped to shape and empower a new generation of archaeologists that will not fear historical and cultural language barriers, different academic traditions, or theoretical frameworks; an archaeological legacy that I know Kristian is proud of.

Period VI

It is impossible to describe Kristian as an archaeologist without dwelling on his affection for constructing archaeological models and flow charts (Kristiansen *passim*). As soon as you start to discuss some archaeological issue with him, Kristian starts to sketch, gather notes, and seek patterns, threads and connections between different arguments, which in the end are manifested in a potential new model or flow chart. Many of these models seem to be created on the hoof, in an impromptu manner (see above), others have been revised and remade in several versions. When I think about it, Kristian might very well be *the archaeologist* who has created the most archaeological models and flow charts in the whole wide world – *ever*. Most of them are seductively illustrative; many of them are thought-provoking and heuristic, some are memorable, while others have been less accurate and perhaps even too simplistic (see Bintliff 2011: 16–17, cf. Kristiansen 2011b).

Even I have been included in one of Kristian's models (Fig. 5). It is in a model, the sixth encounter, showing 'cyclical changes between Rationalism and Romanticism in archaeological/cultural

historical interpretation, and the corresponding value (±) attached to religion' (after Kristiansen 2010b: 95). Here, Kristian defines me as a typical romantic researcher – SIC! I leave it to the reader to find out the truth in that assessment.

Encounters to come

Finally, as a colleague in archaeology Kristian is comprehensible, honest and warm, and liberatingly free from lofty attitudes. He enjoys big dinners and is a lovely host that seldom misses the opportunity to entertain his fellow traveller with a boogie or a blues on the piano. He likes to see *possibilities*, but is easily troubled if you are too occupied with detecting problems and exploring dead-ends. Kristian has a gift for becoming captivated by his visionary projects. He expects much of his colleagues and is keen that others should keep up with his pace.

Because of all that now has been said about Kristian in this essay, and elsewhere in this Festschrift, it is apparent that many archaeologists consider him not only to be a good colleague, but also a dear friend. An underlying reason for this is probably that Kristian has always been generous in sharing his thoughts, latest theories, papers and publications, his visions and wide-ranging archaeological knowledge with others. One always looks forward to the next encounter with Kristian. It is always great fun to catch up, discuss current archaeological *possibilities*, and yes indeed, it's a real joy. Long may you run Kristian, long may you run!

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Note

As a relatively faithful and experienced reader of Kristian's papers and publications, I have noticed that many of his coming articles,

research directions, theoretical explorations and debates, first are formulated as an extended comment in a footnote. After some time, when Kristian found the time to re-work his thoughts, gather references and empirical facts, etc., he would usually realize and materialize the comment into a paper or a new research agenda. The new dating of Bredarör to late period I was first formulated in footnote 6 in his article *From Stone to Bronze Age – the Evolution of Social Complexity in Northern Europe, 2300–1200 BC* from 1987. About 15 years later he presented his empirical evidence for this re-dating (Kristiansen 2004a, 2004b, cf. Goldhahn 2009). Moreover, the new dating of Bredarör is central to Kristiansen and Larsson's arguments and conclusions in their influential book *The Rise of Bronze Age Societies*. After detecting this peculiar trait in Kristian's style of writing, I always read his footnotes with great care to try to figure out where he will steer his research agenda next. More than once I've found this pattern confirmed.

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ON THE ORGANIZATION OF EUROPEAN ARCHAEOLOGY

Willem J.H. Willems¹

Abstract: This paper is a tribute to Kristian Kristiansen and the story of how European archaeology got organized: how a journal was conceived that gave birth to an association that brought forth a council.

Keywords: EAA, EAC, Europe, ICAHM

Introduction

Kristian and I probably met for the first time in about 1986. As the young director of the Danish Archaeological Heritage Administration, he visited the Dutch State Archaeological Service (ROB) for a lecture on the organization of Danish archaeological heritage management. No doubt that visit was part of his network building efforts in Europe in the 1980s, that he himself described in the anniversary issue of *The European Archaeologist* (Kristiansen 2004). I had just become the deputy director of ROB and was venturing on a similar path, so it is by no means a coincidence that our paths kept crossing after that, and for a while were almost running parallel. We were both also quite passionate about the role of research as an integral component of archaeological heritage management, and the need to keep both branches in one united field of archaeology. That was a situation that was no longer as entirely self-evident as it had been before, after the rise of development-led archaeology in the USA and UK and the discussions that had started in Western Europe.

The incubator years

In the 1980s Europe was still politically divided by the Iron Curtain, a situation that seemed stable and unchanging. This was not true for the management of archaeological heritage, however, because there was a growing awareness that archaeological resources were rapidly disappearing while rescue excavation could only record a small part of the information that was irretrievably lost. Through various initiatives such as the international conferences organized by the Council of Europe in Florence in 1984 and in Nice in 1987 (Council of Europe 1987, 1989), a debate was initiated on a European scale on how to move from a static 'monuments protection' approach to a modern and more dynamic 'management of archaeological heritage' in rapidly developing urban and rural landscapes. This debate led to what would later become the Valletta Convention, the revised European Convention on the Protection of Archaeological Heritage. Globally, the International Union of Pre- and Protohistoric Sciences (IUPPS) had never bothered much about heritage management. In retrospect that is entirely logical, because heritage is always political and cooperation of the archaeological establishment from both sides of the Iron Curtain could only be based on a concept of 'pure research', oriented towards the past and divorced from the real world. But it did mean that archaeology was largely conceived as being apolitical and lacked an international organisation that

was specifically devoted to managing archaeological heritage. By coincidence, both situations were remedied in the same year, 1985.

The first important development was that in 1985 ICAHM was created, the International Committee on Archaeological Heritage Management. ICAHM is a committee of ICOMOS, the International Council of Monuments and Sites, a non-governmental organization that has as one of its central aims 'to establish international standards for the preservation, restoration, and management of the cultural environment'. The emphasis is on buildings and the built environment, which explains why it took two decades before ICAHM was founded, mostly due to the efforts of Henry Cleere, who at that time was director of the Council for British Archaeology, and also Margareta Björnstad, then head of the Swedish *Riksantikvarieämbetet* (National Heritage Board). In 1990, this committee produced an important standard in the form of the 'Charter for the Protection and Management of the Archaeological Heritage', also known as the Lausanne Charter.

The second important development in archaeological organization at the global level also occurred in 1985, with a dispute over South African participation in the eleventh IUPPS Conference that was to be held in England in 1986. The conflict proved to be insoluble. The apolitical IUPPS, founded on the concept of 'pure research', could not accept banning anyone from participating. On the other side, there were equally strong feelings about the political and moral issues involved, especially because the meeting was intended to increase participation from Third World countries. The outcome of the controversy was that in 1986 the first World Archaeological Conference (WAC) was held in England and that the eleventh IUPPS conference was moved to Germany in the following year.

Meanwhile, in Denmark, Kristian obtained a two-year sabbatical at the Research Centre for the Humanities in Copenhagen from 1987-1989, which allowed him to start realizing a plan to create a journal of European archaeology. He gathered a core group that included Chris Chippindale, Ian Hodder, Mike Rowlands and Alain Schnapp and by late 1990 a first volume of the Journal of European Archaeology was almost ready. Publication was postponed, however, because it was realized that a journal would have a better chance of success if it were linked to a membership organisation. For that purpose, Henry Cleere, who had been one of the founders of the Institute for Archaeologists (IFA) in Britain, was consulted (Cleere 2004) and a broader network was mobilized. The resulting group met for the first time in November 1991 in the Maison Suger in Paris, where Alain Schnapp had been able to secure funds for this purpose.

¹ Dean, Faculty of Archaeology, Leiden University, the Netherlands. This paper is partly based on an earlier publication for the 10th Anniversary Conference Issue of *The European Archaeologist* (Willems 2004).

The emergence of the EAA

This is how I got involved. I had meanwhile become the director of ROB, so Kristian and I were more or less direct counterparts. He called me sometime in early 1991 and I remember being interested in what he had to say about the need for a European journal, but suddenly being poised on the edge of my seat when the conversation turned to the need for a European-level organisation in archaeology. Those were hectic days, full of change. I had been called to Strasbourg in late 1988 to represent my government in a committee of experts convened by the Council of Europe that was to rewrite the rapidly outdated convention of London of 1969 into what – on Malta in 1991 – became the new Valletta convention, more geared to the needs of modern society (Willems 2007). Being accustomed to international meetings firmly within the ivory tower context of strictly academic archaeology, working on this committee under the chairmanship of Gustav Trotzig from Sweden had opened my eyes to much broader and more inclusive international perspectives on archaeology. In those same years, the Iron Curtain had disappeared and especially through my close contacts with German colleagues, I had become aware of the enormous consequences for the role and the organisation of archaeology, and the need for reunification after almost half a century of separation. Internationally, there was only IUPPS, with a formal structure that, at that time, was rather unappealing to many of us, then still the ‘younger generation’. And so was WAC, which had just had its second conference and was as extremely politicized as at its start.

So, of course I promised Kristian to come to the Maison Suger in Paris and take part in the discussion that followed. He had succeeded in gathering a distinguished group of academics and heritage managers. In addition to the individuals already mentioned, this including Gustav Trotzig from Sweden, Bogdan Brukner from former Yugoslavia, Albrecht Jockenhövel from Germany, Ilse Loze from Latvia, Evzen Neustupny from Czechoslovakia, Evgeniye Nosov from Russia, Arek Marciniak from Poland, Isabel Martinez Navarete from Spain, Øivind Lunde from Denmark and Anna Maria Bietti Sestieri from Italy. At the end of that meeting an International Steering Committee was formed under the driving force of Kristian, and in subsequent years this would carry out the many tasks connected with the creation of the European Association of Archaeologists.

Parallel to the work on the Steering Committee, the activities with the Council of Europe continued after the new convention was formally adopted by the Council of Ministers on Malta in January 1992. The ‘Bronze Age Campaign’ was launched, primarily intended to raise public awareness of a common European heritage. In mid-September 1994 that took me to Vienna, on a boat trip along the Danube with a passenger’s list that must have read as the ‘who-is-who in archaeological Europe’. That was the first occasion where Øivind Lunde, myself, and some others involved in both processes such as Geoff Wainwright from English Heritage and Bibis Pennas from Greece, first discussed the need for closer cooperation not only between archaeologists in Europe, but also between the state organisations responsible for heritage management in European countries. But first, there was the formal inauguration of the EAA.

At the end of that 3-day boat trip, on Wednesday 21 September, we – I remember the entire Kristiansen family and Colin Renfrew – were taken by a van that the efficient Predrag Novaković had sent for us from the Danube to Ljubljana, making some detour to avoid Croatia where the war was going on. The inaugural meeting went

well, with Colin as a kind of European archaeological godfather presenting a memorable inaugural address, Henry Cleere in his inimitable way piloting the meeting through discussions about the statutes and such, and Kristian being in charge and elected as the inspiring first president of the association. I was glad to be off the hook, because at home the pressure for reorganisation of the state service was mounting and I could ill afford spending ever more time on international business.

The creation of EAC

A year later in 1995, my hands were so tied by work at home that at the last moment I was unable even to attend the EAA meeting in Santiago, which was the first of the Annual Meetings after the inaugural meeting in Ljubljana.¹ I did remain involved in the initiative, born on the Danube, to start a discussion platform for the heads of State Antiquities Services, but it was Øivind Lunde who organised a first meeting in Santiago in the form of an EAA round table. As he was going to leave office by the end of that year, we had agreed that I would take over after Santiago and that is what happened. It was the start of a series of annual round tables for which all directors were invited each year. Just getting all the addresses and figuring out how archaeological heritage management was organised in European countries was a major task in itself. A mixed group of people from between 15 and 21 different countries met in 1996 in Riga, then in Ravenna in 1997 and in Gothenburg in 1998. In addition, all directors from neighbouring countries were invited to Germany for a colloquium organized by the association of German state archaeologists in Saarbrücken.

It was decided to transform the informal meetings into a formal association, and in Gothenburg it was decided – in order to avoid the usual language problems and different acronyms – to choose a Latin name, hence: the *Europæ Archaeologiæ Consilium*, or EAC.² In contrast to EAA that had simply constituted itself, EAC adopted the legal form of an ‘international not-for-profit association’ under Belgian law. Despite careful manoeuvring to make sure that France, Germany and the UK would all be aboard from the beginning, we lost France for a while. When the official statutes, drafted in Wallonian legal French by a Belgian lawyer, were sent to P. Monod, then head of the *Sous-direction de l’Archéologie* in Paris, we received a short note saying that he would ‘read the draft statutes when they were written in proper French’. Fortunately, this rude apparatchik was replaced not too long afterwards, so France – which was not among the members joining at the inaugural meeting in Strasbourg in November 1999 – joined some years later.

I had meanwhile succeeded Kristian as president of the EAA in 1998 (Fig. 1), so it was decided that it would not be wise to continue my role as founding president, and at the inaugural meeting the presidency was taken up by Adrian Olivier from English Heritage while I became the Secretary. Other members were Friedrich Lüth from Germany as treasurer, Giovanni Scichilone from Italy and Katalin Wollák from Hungary. At the European level, EAC is the necessary complement to EAA and there are many things the one is more suitable for than the other. By its very nature, for example, EAC as an umbrella for State organisations cannot lobby for archaeology or criticise official policies in the way that EAA can, and EAA cannot put into practice many of the initiatives discussed at its meetings in

¹ See the contribution by Novaković in this volume.

² See also Lüth & Willems 2000, Willems 2000.



Fig. 1 Transferring the EAA presidency from Kristian Kristiansen to Willem Willems in Gothenburg in 1998. Dr. Peter Chowne, treasurer, is seated on the left.

the way that the members of EAC can. I continued to serve as secretary for one year, providing a direct link between the two now separate bodies. I long regretted, however, that I had never been able to completely realize the vision that Kristian and I both had of creating more force for archaeology in Europe by cementing the two together as fully independent, but closely interrelated, bodies. Fortunately, in practice, there are now joint committees and things still seem to work out pretty well even after more than a decade, so I guess we should be happy and count our blessings.

Aftermath

For a short time prior to 1998, Kristian and I were working on the board of EAA together. Things at home had settled in a way that gave me more room to manoeuvre, and in Riga in 1996 I was elected Secretary of the EAA, taking over from Henry Cleere. Working with Kristian – still very much in his role of inspiring leader with characteristic lack of concern for practicalities – and together with Peter Chowne taking care of finances in sometimes mysterious English ways, I remember heated but always amiable and inspiring board meetings, usually in Paris, where for some time Alain Schnapp continued to succeed in finding some financial support. But money was getting ever tighter, and lots of time and energy went into problems with the *Journal of European Archaeology*, finally relaunched in 1998 as the *European Journal of Archaeology*.

In that same year, during his second term as president, Kristian who had meanwhile left Denmark for a professorship at Gothenburg University, decided it was time to retire before he ran out of steam. At that very same time, Peter Chowne changed jobs and had to resign as treasurer, which for the sake of continuity made it almost inevitable for me to take over the presidency. I was elected without even an opponent, but fortunately – after completing that last year of Kristian's term – I was re-elected in a proper election. Meanwhile, Elisabeth Jerem had become the vice-president, and found suitable accommodation for board meetings

in the guesthouse of the Academy of Sciences in Budapest, high above the city on the hill of Buda. At first, these were not only beautiful, but very economical indeed. I remember, after my first visit, presenting my expense claim to the travel office in the Ministry. The guy looked at the Hungarian invoice from the Academy, made a calculation, looked incredulously at me and asked "Have you been sleeping under the bridge, sir?". For the EAA, such favourable prices were of course of vital importance as many board members are not supported by their organisation.

In 1998, a generous gift from English Heritage, represented by Geoffrey Wainwright, allowed EAA to establish the European Archaeological Heritage Prize. Some years before, Anna Maria Bietti Sestieri and Øivind Lunde had presented a report on how to realize this objective from its statutes. In 1999, the European Archaeological Heritage Prize Committee was appointed by the Executive Board and almost as a matter of course Kristian was asked to be its chair. That same year, the prize was awarded for the first time to the Portuguese Minister of Culture, Manuel Maria Carrilho. This was in recognition of his part in the extraordinary decision by the Portuguese Government to safeguard the open air rock art of the Côa Valley and abandon plans for the construction of a dam. In 1995, support for that had been one of the actions of the new EAA board (Cleere 2004) and later it led to the nomination and acceptance of the 'Prehistoric Rock Art Sites in the Côa Valley' for inclusion in the World Heritage List. Kristian, with his experience in heritage management, as well as academic archaeology and a good sense of what would give EAA a high profile, was an ideal chairperson for the Heritage Prize Committee.

After six years, responsibility for the committee was transferred to me when I retired as president and Anthony Harding took over. That change also led to a change of the seat of the EAA, which moved towards the geographical centre of Europe, to Prague, where the secretariat is now based and where board meetings take place. EAA has now become a mature organisation that is

robust and financially stable. Its membership is still somewhat dominated by Anglo-Scandinavian-Dutch members, but it has become more diverse, and its new president Fritz Lüth from Germany, has already succeeded in further broadening its base. Kristian is partly responsible for that as well, because he was the one who persuaded Fritz to run for president. His attachment to the *Deutsches Archäologisches Institut* (DAI) is an important asset. Kristian and I had long been discussing how the DAI, as a German, but also an international, institution of European archaeology, should in some way be connected to the EAA.

At the last Annual Meeting (the 18th, not including the inaugural meeting) in Helsinki, almost 1,200 members attended over twenty parallel sessions. This shows that the EAA has achieved a following and momentum similar to its American counterpart, the Society for American Archaeology, although the SAA also has a political dimension lobbying in Washington, a role that EAA still has not been able to take up in Brussels. The EAA has, however, joined the umbrella organisation *Europa Nostra*, which is a very good development because *Europa Nostra* has a role in lobbying for the broader field of cultural heritage in Europe. Through this, the EAA joins forces with similar organizations in the cultural field in Europe, gaining access to a wider base of knowledge and expertise. The European Journal of Archaeology is also flourishing, although it has an unhappy history of problematic publishers, and Kristian is still very much involved, though now more in an advisory role as *elder statesman*. I believe that for him, as well as for me, being part of archaeology at the European level

in this way for more than 25 years has been a great deal of work, but also an immensely rewarding experience in many ways. And not to forget: a lot of fun as well!

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‘THE EAA IS UP AND RUNNING’¹: BEHIND THE SCENES OF THE INAUGURAL MEETING OF THE EUROPEAN ASSOCIATION OF ARCHAEOLOGISTS

Predrag Novaković

Abstract: The EAA Inaugural Meeting took place between the 22nd and 25th of September 1994 in Ljubljana, Slovenia. The meeting proved to be a great success not only by giving life to what soon became the largest and the most important European association of professionals in archaeology, but also by establishing a model event for all future EAA annual meetings. However, in 1994, prior and during the inaugural meeting, many things were at stake, and it was only due to the great efforts and improvising skills of the local Organizing Committee in Ljubljana and the EAA Provisional Committee (chaired by Kristian Kristiansen) that the meeting could be declared a full success. As co-organizer of the meeting I have a privileged position to share some interesting, but perhaps less known, insights into this event.

Keywords: EAA, Inaugural meeting, Ljubljana, archaeology

Prologue

I heard for the first time about the EAA initiative in 1992 at the EuroTAG conference in Southampton, UK. At the symposium *The identity of Europe - an archaeological perspective*, Mike Rowlands (1992) gave the paper ‘Why do we need a European Association of Archaeologists?’, where he listed a number of reasons, including the alarming results of cross-Europe surveys regarding the common European heritage and European identity. At that time, however, not many of us, coming from the other side of the former Iron Curtain, could fully appreciate the idea Rowlands put forward. Simply put, in the early 1990s, in former ‘Eastern’ Europe there were other issues strongly influencing our personal and professional lives: the dissolution of multi-ethnic states (Yugoslavia, Czechoslovakia, the Soviet Union), civil wars (Yugoslavia, fringe areas of the Soviet Union), harsh early ‘transitional’ years in the economy... In short, the EAA idea seemed to me interesting, but somehow out of my immediate experience and ‘reach’. I could not have been more wrong!

Ljubljana - The First Runner-up

In late spring 1993, Božidar Slapšak, a colleague of mine at the Department of Archaeology, informed me about the discussions about the EAA he had with Alain Schnapp, Michael Shanks and Jean-Paul Demoule during his professorship in Paris. He was also asked to explore the possibility of Ljubljana being a candidate for the EAA inaugural meeting. Soon after, the letter from the (provisional) EAA Committee arrived asking us the same. Actually, it was only then that we started to consider the invitation more seriously. Since they insisted so much, why not? It was just a candidacy, after all. These were the thoughts Mitja Guštin (Head of the Department) and I (at that time I was a junior researcher and also President of the Slovene Archaeological Society) had at the backs of our minds when we produced our proposal in August 1993.

Out of a number of possible places (Portorož, Bled, Ljubljana) our

location was selected, mostly for logistical and financial reasons. We also proposed a joint organization between the Department of Archaeology, University of Ljubljana and Slovene Archaeological Society. Provided the expected size of the meeting we believed that its organization would be too much for one institution only. We also assumed that the EAA must have had some firmer structure behind it, and that our task would be mostly providing organizational and logistical assistance to an already well-designed symposium. We also had no idea about other competitors, and on many occasions wondered why they insisted on our bid.

In 1993 not many things spoke in our favour: being independent only since 1991 Slovenia was fairly unknown, many people associated it with the ongoing civil wars in former Yugoslavia, there were no ‘big’ archaeological names coming from Slovenia nor were there renowned sites, and we had no previous record of collaboration with colleagues from the EAA Committee, and last but not least, a meeting of this size in a former socialist country would inevitably raise questions of whether the transport, hotels, banking services etc. could meet the necessary requirements. Actually, our only advantage was that things were relatively inexpensive.

This time we were quite right. In early fall 1993 we received an apologetic letter from the EAA thanking us for our efforts and inviting us to the inaugural meeting in Poznań, Poland. We were not really disappointed. In fact, after being informed that Ljubljana was the first runner-up¹, we felt a certain relief. Fair enough, our candidacy was met with all due respect and consideration. Wrong again!

The meeting will be in Ljubljana

In October 1993, Mitja Guštin received an urgent message from Kristian Kristiansen, our main liaison with the EAA. Apparently something went wrong with Poznań and he was wondering if Ljubljana was still ‘in the game’. Mitja’s call came at a very bad moment for me. I was chairing the Annual Meeting of the

¹ Title on the cover of *The European Archaeologist*, No. 3, May 1995.

¹ We did not know that Poznań and Ljubljana were probably the only two candidates to submit complete bids.

Slovene Archaeological Society which ended disastrously. The majority of the registered members did not attend the Business Meeting, and I was forced to cancel the business agenda. Since I was not in a good humour we had a chance to seriously discuss the re-emerged issue only a few days later. In fact, it could hardly be called a discussion. In a *tete-a-tete* meeting with Mitja Guštin we made the decision in a minute or two. "Are you still for it?" he asked me; my reply was: "Yes, but only if you are responsible for fundraising."²

It was a great challenge, but, soon we faced a hard landing. In communication with the EAA we realized that there was no basic model for such a meeting and that the meeting had to be designed in all its aspects from scratch. Today, the organizers of the EAA Meetings are chosen at least two or three years in advance, the EAA Handbook contains guidelines for organizers, one can consult the organizers of the previous meetings, and the EAA Secretariat assists with mailing lists, circular letters, election materials etc. And then, there is also the Internet! In 1993 there was nothing of the kind. In December when the news about Ljubljana was made public we were only nine months away with literally nothing in our hands but the dates (22-26 September 1994) and a very general outline published in the *The European Archaeologists* (TEA 1, 1993, 4).

Brainstorming

Both sides soon realized that it was crucial to have a real brainstorming session as soon as possible. The gathering was scheduled in Ljubljana (4-6 February 1994). Kristian Kristiansen (interim President), Henry Cleere (interim Secretary) and Bogdan Brukner (member of the provisional EAA Board; died in 2006). Came to represent the EAA, and our local group was made up of Mitja Guštin, Božidar Slapšak and me.

Kristian Kristiansen and Henry Cleere came by airplane a day before while Bogdan Brukner came the next morning from Novi Sad, Serbia (at that time the Federal Republic of Yugoslavia³), by bus. Due to the UN sanctions imposed in 1992 on the FR Yugoslavia and very rigorous Slovene visa regime for the Yugoslav citizens, organizing his arrival was quite complicated. Anyway, Mitja Guštin succeeded in obtaining the recommendation letter for B. Brukner at the Ministry of Science and he got a visa just in time. Due to the closed border between Croatia and Serbia he travelled 15 hours, via Hungary.

With the exception of Bogdan Brukner, we knew very little about each other. We 'warmed up' with visits to the venues of the Faculty of Arts, which we got free of charge, and where the scientific symposium and business meeting were planned. Then, we walked around the town for a short inspection of the hotels.

Time pressure was so strong that we did not wait for B. Brukner. Already on Thursday afternoon (3 February) the real discussions started, and the next morning I led the most intensive and longest brainstorming session I ever had. The first part took a full day and a half. I must admit, we did not start very systematically and efficiently. It was quite the opposite. It was critical to come

up with a complete management plan for the whole event in the shortest possible time, and to design its full programme down to every single session and associated event, and each of us started very energetically and full of ideas but the discussion was not organized well. After six hours of heated discussion without a break we had not reached any useful conclusions.

The first major problem was the mailing list. It was crucial to inform thousands of archaeologists in Europe and worldwide. Easy to propose, but how to do it in the pre-internet era? How much would this cost using conventional mail? Since none of us possessed a list with more than a few hundred addresses we had to ask various international and national archaeological and heritage organizations for their mailing lists, membership lists and similar.⁴ There was time and resources for only one massive mailing and the materials should contain all the necessary details. There was no time for a second distribution. It was decided that the information pack should be mailed not later than mid-March. And, it had to be in the lightest possible package. We succeeded in collecting 7,000 addresses, but when mailing 7,000 envelopes every gram of weight counts.⁵

The most difficult and disputed item on the agenda was the programme of the symposium. We did not have problems with its general structure and timetable (opening ceremony, inaugural lecture, reception on Wednesday; scientific symposium on Thursday, Friday and Saturday, with closing plenary session; excursions on Sunday and party on Thursday)⁶, but for several hours designing the structure and content of the scientific symposium proved next to impossible.

Various alternatives were discussed at length, from a small number of sessions advocating better coherency to a much more open structure with several sessions running parallel. Should sessions be independent or organized into more coherent blocks? What sort of quality check should be introduced? What would be the titles of the sessions, blocks etc.? What topics are crucial for the EAA to discuss? What should be the balance between more universal and more regional topics? Who should chair the sessions, and who would serve as a back-up? How long should the papers be? What is the difference between round tables, sessions and working groups? These and dozens of other questions demanded quick answers. The issue of the structure and content of the symposium took most of the Friday in a very tense atmosphere, but without actually coming to any agreed solution. On the contrary, we had to 'reset' the debate several times and start from the beginning, every time with less energy and more frustration.

⁴ Here we were very successful. The organizers of the UISPP in 1992, Bratislava, Slovakia gave us their mailing list, the Institute of Field Archaeology, UK sent us labels with addresses of its members, and we also obtained Spanish and German lists of institutions; the University addresses were extracted from the World of Knowledge (a gazetteer of universities worldwide). We also worked with several national institutions as well. Sheffield Academic Press sent us their mailing list in return for ours. In the end, in less than a month, we were able to compile a list of almost 9,000 addresses worldwide, which was then reduced to some 7,000. The EAA at that moment had some 400 members.

⁵ Mailing costs only were around 3,500 – 4,000 DM (the equivalent value of 3,500 and 4,000 euro today). In total all costs of mailing and producing the materials were around 7,500 DM (see in University of Ljubljana Report to the Faculty of Arts, 19 April 1994, Department of Archaeology Archive, EAA Materials). The package was sent in A5 envelopes printed in Ljubljana with the heading 'EAA Inaugural meeting'. The envelopes contained one A4 sheet printed on both sides with all of the necessary information about the programme and associated events, an EAA leaflet, draft statutes, and a yellow postcard for registration. That card was purposely designed in intense yellow to immediately attract the attention of the recipient. On the front page there was a simple outline of Europe with 17 randomly chosen cities mapped on it with Ljubljana in the centre. The back page was a simple form to be filled in with all the necessary information for registration and accommodation.

⁶ In fact, the only event we did not plan and which later became a standard component was the closing dinner.

² We telephoned K. Kristiansen with our decision and on 25 October he sent us a letter confirming Ljubljana as the organizer (University of Ljubljana, Department of Archaeology Archive, EAA materials).

³ After the dissolution of Yugoslavia in 1991, Slovenia, Croatia, FYR Macedonia and Bosnia and Herzegovina proclaimed independence. In 1992 Serbia (with Kosovo) and Montenegro proclaimed independence from the Federal Republic of Yugoslavia, and in 2003 was renamed to Serbia and Montenegro. In 2006 both countries proclaimed independence.

When tension reached its peak Henry Cleere took a break to have a cigar. After a few minutes he rushed back with his last proposal saying that he would not accept any changes to it. He proposed four general thematic blocks (later defined as: The politics of archaeology, Heritage management, Conceptual and theoretical issues in European Archaeology, Contemporary research issues) each containing four sessions. Surprisingly, none of us objected. Was it because of Henry's very assertive conduct, exhaustion or fear from losing precious time...; it must have been all three of those together. Nevertheless, later on, his proposal proved to be a strong one and has been implemented in only slightly modified forms for the subsequent EAA meetings.

But that was less than half of the job done. Now we had to invent at least 16 session topics and nominate some 25 names as chairpersons, and there were still dozens of other smaller issues we hadn't even touched upon yet. But, after having spent so much energy on the general structure of the symposium alone this task seemed impossible. We were all too exhausted, and since we had suffered so many set-backs in our discussion, we really were not in the shape or mood to continue.

But, if Henry Cleere's solo action made a crucial breakthrough earlier that day, now it was Mitja Guštin's turn. After several unsuccessful attempts in defining session topics he suddenly closed the meeting and decided to take us on a trip to the Škocjan Caves (UNESCO World Natural Heritage Site) the next day (Saturday). None of us was happy with this, especially Kristian Kristiansen, who was about to leave Ljubljana on Monday and feared that we were losing time. For him and Henry it was crucial that all major matters should be agreed not later than Sunday evening. However, no one openly objected and the rest of Friday evening was free.

The next morning the ice was broken. Mitja, while driving the van, suddenly started to discuss unresolved issues and asked me to take notes. The ride was only a little over an hour long, but the discussion turned out to be by far the most productive we had during the whole brain-storming period. We were ticking items off the agenda issue by issue. However, driving and discussing took its toll. We arrived some 10 minutes too late for the last visit to the caves and the receptionist could not be persuaded to let us in. This abruptly changed the positive atmosphere built up during the ride. Our trip turned into another set-back. We had to visit these caves! I had the idea to play a little trick with Henry's business card (UNESCO Cultural Heritage Office, Paris). The effect was immediate, not only were we let into the caves with a special guide, during the visit of the 'high UNESCO representative and his escort', but the maintenance team secretly repaired the cable railway (sic!). The visit was highly rewarding. Four kilometres of walking in the underground world made a lasting impression on all of us. We saved the Saturday! Our discussions the rest of that day were far less tense.

Consequently, the Sunday agenda went very smoothly and it took only half a day. There were still some titles of the session topics missing, as well as some chairpersons, some topics needed refinement... A crucial issue was to persuade the listed chairpersons to agree on chairing the already defined sessions.⁷ Later that day B. Brukner embarked on another 15 hour bus journey home, and on Monday I escorted Kristian to the airport while Henry had his flight on Tuesday. Finally, after they were all gone, I breathed

the greatest sigh of relief. I needed a few days to recover, and, I believe, the others did as well.

Looking back, I am still surprised by what we achieved at this gathering and how we actually did it. This meeting simply had to be successful. In the event of its failure there was no alternative for holding the EAA inaugural meeting in 1994. The pressure of time - we were only six months away - the burden of responsibility, and the effort everyone was prepared to invest was so great that, helped along by occasional strokes of luck and ingenious moves, six strong individuals with limited knowledge of each other became a team capable of inventing a full and feasible management plan and scientific programme in 35 hours (only!?).⁸

Organization

Accomplishing tasks in the remaining weeks in February was essential. Both teams (Ljubljana and EAA) worked hard in this period, mostly on collecting mailing lists and contacting chairpersons. On a weekly basis we received bulk packs of printed materials, and stuffed these into the envelopes to ship daily. The Faculty of Arts courier service could not process more than 200 - 300 of our announcements on the top of their regular work, so the whole shipment of 7,000 envelopes took more than 3 weeks and it extended well into March. We were all rushing but everything went fine, more or less, and we were able to give positive reports on progress at meetings with the EAA Board in Paris (25 March 1994).⁹

Finances were, as always, crucial. Mitja Guštin proved his fundraising skills. On top of a number of services we got free of charge, he also obtained a grant of 580,000 Slovene Tollars from the Ministry of Science and Technology. Some 10,000 German Marks was also provided by the EAA. Other funds included the Wenner-Gren grants for the delegates from Central and Eastern Europe (10,000 USD), and the discounts we negotiated with the hotels were also considerable. Altogether, our budget was around 27,000 euro.¹⁰

What we were afraid of most was communication with Eastern European countries which at that time had a rather limited communication infrastructure. And this turned into a real nightmare. Letters travelled for weeks, and faxing (our fastest means of communication at that time) to Russia, Ukraine, Latvia, Belarus, Tajikistan... was a genuine lottery.¹¹ Every message had to be very concise and carefully planned since it could frequently be the only one which went through.

However, by the end of April the first yellow postcards started to come back to us with the first delegates who registered for the conference, and with time their number increased.

⁸ More details are recorded in the minutes of this meeting (University of Ljubljana, Department of Archaeology Archive, EAA Materials).

⁹ See Minutes of the EAA Steering Committee (25-26 March), Maison Suger, Paris. Later on, we also gave a report on progress to Kristian Kristiansen on the occasion of his travel to Vienna in late May 1994. We also sent another short progress report to the EAA Secretariat on 19 April.

¹⁰ University of Ljubljana, Department of Archaeology Archive, EAA Materials, Report on the Finances of Inaugural meeting of the EAA, 2 February 1995. Among the most 'interesting' sponsored items were the earliest mobile phones available in Slovenia. Telekom Slovenija gave us two telephone sets with batteries weighing some 2kg, which were kept in a separate pouch. Another 'interesting' item came from McDonalds: 100 l of blueberry syrup for mixing with water. We saved it for the party.

¹¹ For sending faxes to these 'troublesome' destinations we used the all-night open branch of Pošta Slovenije. We brought them letters in the evening (when lines were less busy) and checked our luck the next morning.

⁷ Most of them understood very well our situation and kindly agreed. Indeed, only those who could not attend the meeting needed replacements.

The 'Yugoslav' (Serbian) issue

The troubles with Bogdan Brukner's arrival to February's brainstorming session were just an introduction to the problems for the delegates from the FR Yugoslavia. Just to remind the reader, in 1994 there was still war in Croatia and Bosnia and Herzegovina. And on top of the UN sanctions, a number of European countries (Slovenia included) introduced rigorous visa regimes for the citizens of the FR Yugoslavia, Bosnia and Herzegovina and FYR Macedonia.

There was a lot of confusion regarding what actually was banned by the U.N. sanctions. We consulted some lawyers and the Ministry of Foreign Affairs, and, apparently, the ban was on business affairs with governmental and other enterprises from FR Yugoslavia (cross-border banking included), thus culture, science and sports were partly exempted, while travelling was not blocked. Actually, it was the Slovene visa regime which made travelling extremely difficult.

The Yugoslav citizens could obtain visas only for private visits and only upon an invitation letter from a person (almost exclusively close relatives) from Slovenia. In all other cases it was possible to get a visa upon the 'recommendation' letter of one of the Slovene Ministries 'finding the visit in the interest of Republic of Slovenia' (a phrase commonly used in the those letters). Our case was clear, we had to provide arguments for 'finding the visits in the interest of the Republic of Slovenia'. We were, indeed, having some mixed thoughts on this matter. The EAA had already decided that - to be on the safe side regarding the UN sanctions - the Yugoslav delegates were not eligible for the Wenner-Grenn grants. But our problem was different. It was not about financing the Yugoslav citizens, but providing the opportunity to come to the meeting.¹²

However, our views were not widely shared in Slovenia. The Ministry of Science and Technology, which previously issued such a 'recommendation' for Bogdan Brukner, refused to do so this time. We then turned to the Ministry of Culture which, actually, found our arguments valid and agreed to issue the recommendations, but they found the number of delegates (10) 'somehow too high' (sic!). To my great surprise, I was asked to choose some names from the list, which I immediately refused and protested against such treatment. They all had the same legal status!

My last move was to write a letter to the Yugoslav delegates explaining our unsuccessful attempts. I attached a standard printed invitation to the meeting and advised them to personally try their luck at the Slovene Embassy in Budapest.¹³ I had no hope whatsoever and for me the whole issue ended. To my great surprise, they all turned up at the meeting. Did the Embassy clerks act on their own, had there been a tip from the Ministry of Culture, or was it just sheer luck...?

There was also some discontent among the Slovene and Croatian archaeologists. Bitter feelings caused by the war were strongly felt all around. The Slovene Archaeological Society (I left its presidency earlier that year) issued a protest against the participation of the Yugoslav delegates.¹⁴ A similar protest was also sent in the open letter by Ante Rendić Miočević (1994), the President of the Croatian Archaeological Society, announcing the boycott of the Croatian archaeologists.¹⁵ This culminated in the Slovene (yellowish) press during the meeting and we gave several interviews on this matter. Our answer was very simple: an invitation to the EAA round table aimed for debating archaeology and politics.

However, these protests had no real effect on our organization, and as for the Croatian boycott, it turned out soon that this was the individual move of the President of the Croatian Archaeological Society and not the official stance of the society. Delegates from Croatia were, of course, present at the Meeting.

The feverish last weeks

At the beginning of September there were some 250 registered delegates from 30 countries. Our main concern at that time was placing them in hotels. In order to get substantial group discounts all the accommodation arrangements were made through our organizing committee. We booked the rooms and placed delegates into them.

Nowadays, very few hotels would run the risk of booking a large number of rooms without a contract or payment in advance. But at that time it was different. We were all aware, hotel managers included, that Slovenia has almost no reputation in the wider international public of having an efficient and secure banking or money transfer system. Quite the opposite, many people were still associating Slovenia with war, insurance agencies treated Slovenia as a high risk country etc. Asking delegates to fully or partly cover their expenses in advance could turn them away. Moreover, the people from Eastern Europe had very costly and limited, if any, possibilities for paying fees abroad. The only reasonable way forward involved a certain risk: to trust the delegates and make all charges upon their arrival. And, that proved to work very well.¹⁶

With an increasing number of registered delegates we had realized, one week before the meeting, that we did not have a venue large enough for the Opening Ceremony. Here, again, Mitja made some phone calls and the Faculty of Electrical Engineering offered us their largest hall, free of charge.

Another problem occurred with Kristian Kristiansen (candidate for the President of the EAA), Colin Renfrew (inaugural lecturer) and some other members of the EAA provisional Committee who had to attend the Council of Europe's ceremony of Europe's Bronze Age Year campaign in Budapest an evening before the opening ceremony in Ljubljana.

¹² I remember I frequently consulted Peter Ucko's book on the crisis of the UISPP Congress in Southampton, 1986 (Ucko 1987) and also some other authors (e.g. Ian Hodder 1992) who wrote about this issue. To a certain extent the situation seemed similar (the UN sanctions banned cooperation with the apartheid-practicing South African Republic). Ian Hodder advocated a legalist stance and argued against 'apolitical' attitude. I fully agreed with him, but in our case, the UN sanctions did not ban the participation of the Yugoslav citizens in the international events in sport, culture etc. Moreover, we actually wanted to initiate discussion with the colleagues from Serbia, Montenegro, and Kosovo under the EAA 'umbrella' and according to the EAA code of conduct. It was a small step anyway towards establishing a basis for future collaboration, but looking back from a distance of 17 years, and after regularly enjoying the company of colleagues from all countries of former Yugoslavia at the EAA meetings, I can say it was a step in the right direction.

¹³ Slovenia had no Embassy in Yugoslavia at that time.

¹⁴ University of Ljubljana, Department of Archaeology Archive, EAA Materials (Letter 3/94-AD, 2 June 1994).

¹⁵ There was also another issue raised in this letter. Namely, almost at the same time as the EAA inaugural meeting there was the 13th International Congress of Palaeochristian Archaeology in Split, Croatia. The President of the Croatian Society complained that the EAA and the Ljubljana Organizing Committee should have paid attention to this in organizing the dates for the meeting, which overlapped with the Split congress (25 September – 1 October 1994).

¹⁶ The hotel managers actually agreed to receive the payment for accommodation in cash, after the meeting, by the end of September. Three days after the meeting I collected all the money in a large business suitcase and visited all the hotels and paid the bills on the spot. I do not think something similar would be possible today.

There was no other solution than to send a minibus to Budapest and bring the VIPs to Ljubljana by noon the next day. The ride must have been memorable since it has been noted on several occasions, even in the TEA report.

Another anecdotal case is associated with the excursion. Somehow we failed to inform (let alone to discuss with) the Regional Museum of Nova Gorica that our excursion (some 80 persons), would be visiting them on Sunday morning. To our (and their) shock we realized this only one day before the excursion. However, in spite of the very late notice, the Director of the Museum was able to gather his staff on Saturday evening and organize a nice welcoming reception. And, everyone was captivated by the performance of the female choir in the museum's garden, but it was a pure coincidence - they were there to take photos for their new record.

Similarly, we had to improvise with the party we had in one of the galleries in Ljubljana. Kristian Kristiansen insisted on having live music and dancing. But how would we get a decent band in such a short time and who would even play for a very modest fee? To cut the story short, it was Mitja Guštin's daughter's boyfriend's group that stepped in and did an excellent job of raising spirits.

These and many other smaller issues (anecdotal or no) caused us to be very busy in the days leading up to and during the meeting. However, we were able to improvise quite efficiently and solved most of the problems that came along. Of course, Mitja and I both had excellent support in the students and colleagues from the Department and in the Faculty administration, all of whom worked hard and were very dedicated throughout the process.

Epilogue: The inaugural meeting

At the Opening Ceremony (24 September) everything was in place and went according to plan: all the speakers arrived in time, the Minister of Science and Technology welcomed us, the hall was filled with delegates and the official inauguration of the European Association of Archaeologists was, indeed, a solemn event. The atmosphere at the reception which followed the inauguration

was memorable. All our fears, problems and tensions were gone, and I could see the same expressions on the faces of Kristian Kristiansen, Henry Cleere, Bogdan Brukner and all the others from the EAA who, to the best of their abilities, contributed to this event.

Taking all the circumstances into account the meeting was a great success. The final figure of almost 250 delegates¹⁷ from 36 countries may seem small compared to the EAA meetings today (600-800), but it was the ice-breaking event.

As for the staff from Ljubljana and myself, the organization of the meeting was an unrepeatable and rewarding experience, and an opportunity to meet and work closely with colleagues with whom we shared great responsibility and, why not, even the feeling that in those five days Ljubljana was the centre of the archaeological world, and that we, together, made it so.

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Archive

University of Ljubljana, Department of Archaeology Archive, EAA Materials

¹⁷ The number of officially registered delegates was smaller (186); Slovene archaeologists had free admittance (see in Report on the finances of the Inaugural Meeting of the EAA, 2 February 1995).

LANDSCAPE, DEMOGRAPHY AND SUBSISTENCE ECONOMY

CHANGES DURING THE LATE MESOLITHIC IN THE CENTRAL SCANDINAVIAN INLAND

Per Persson

Abstract: Social structure can hinder the use of known technology to its full extent and the technology can therefore under such conditions be under-used. The hunting of elk (moose in North America) is an example of this. Maximum sustainable yield for Late Mesolithic elk hunting can be estimated to at least 100,000 animals per year in Scandinavia. How much of this yield could actually be realized is a question of hunting management, i.e. social organization of the production. Radiocarbon datings on animal bones from Stone Age sites at Rena, Hedmark district, Norway show a pronounced concentration to a 1,000 year-period between 4800 BC and 3800 BC. One possibility is that this supposed increase in population during the Late Mesolithic is the result of the introduction of the management of elk hunting. This might therefore be seen as the result of the establishment of a Neolithic type of society more than 500 years before the introduction of agriculture in Norway.

Keywords: Elk, moose, Scandinavia, inland settlement, Mesolithic, Neolithic

Inland Mesolithic settlement

Excavation of Stone Age sites has been carried out along the River Rena and the nearby small creek Yggla in connection with the establishment of a new military training ground in the Hedmark district, Norway (Fig. 1) (Boaz 1997; Stene 2010). Today this is as far away from the coast as is possible on the Scandinavian peninsula. In the earliest part of the Mesolithic it was closer to the sea, but even then this was an inland area (Fig. 2).

In podzol soils, like the ones in this area, finds from all periods on a site appear in one single layer that is only a few cm thick. This, in combination with the fact that there is much charcoal in the ground due to the frequent forest fire in these pine forest areas, makes it hard to date a Stone Age settlement in this area by radiocarbon. In most cases there is simply no way to determine if charcoal pieces are leftovers from human settlement or from forest fires. Unburnt bones are rarely preserved on these sites due to the acidic soil, but burnt bones are found rather commonly. Therefore it was an improvement for the dating of these sites when it became possible to date radiocarbon from cremated bones about 10 years ago (Lanting & Brindley 1998; Lanting, Aerts-Bijma & van der Plicht 2001). Unlike charcoal it can be assumed that the appearance of cremated animal bones on the sites is the result of human activity.

Inland settlement has existed since the glacier retreated and made the land available for settlement. In the surroundings of the River Rena this was about 8000 BC (Stene 2010: ch. 2.1). The oldest sign of humans in the area is from about 500 years later, and consists of a cooking pit and some waste flakes from stone tool production at Knubba (Amundsen 2007). This site is a small summer camp. It may be that these are the remains of people who came all the way from the coast, but it may also indicate that in the earliest phase there was already a population that spent most of their lives in the inland. At least the latter seems to be the case in south Scandinavia judging from the $\delta^{13}C$ values from human skeletons (Fischer et al. 2007). These show that these people only ate terrestrial food during the Early Mesolithic, and therefore it can be excluded that they spent part of the year at the coast and part inland. Two skeletons found in the inland of western Sweden shows the same as both had a terrestrial ^{13}C signature (Jonsson

& Gerdin 1997; Vretemark 1996). These two individuals were dated to about 7950 BC and 7700 BC respectively. They were found some 350 km south from the River Rena. This is far away but they are the closest find we have of Mesolithic human remains from inland.

The total numbers of datings made on cremated animal bones from the sites investigated at Rena are 29, and they come from 13 different sites (Fig. 4). The result shows that there are bones from all periods but there is a pronounced accumulation to a period of about 1,000 years between 4800 BC and 3800 BC. In archaeological terms this is the end of Late Mesolithic and the beginning of the Early Neolithic period. The Late Mesolithic in south-eastern Norway is divided into the Nøstvet Phase/Phase 3, 6350 – 4650 BC and the late flint point using phase, Kjeøy Phase /Phase 4, 4650 – 3800 BC (Glørstad 2004). So according to this, the inland sites seem to date mainly from the Late Mesolithic Kjeøy phase (Fig. 3).

One explanation for the high number of datings to the Late Mesolithic may be that the number of sites in use, as well as how often they were used, increased during this phase. If this is indeed the case, then the radiocarbon datings on cremated animal bones from settlement sites can be used as a proxy for inland population development. This is of course not the only possible explanation. The simplest alternative is that the distribution of the datings is the result of pure chance. It may also be the result of some systematic source of error. For instance it might reflect some special treatment of the meat that was 'in fashion' during the Late Mesolithic, resulting in more burnt bones per animal than during other periods. These possibilities have to be investigated further in future work. The datings on cremated bone, however, agree well with Joel Boaz' interpretation some years ago based mainly on typological datings (Boaz 1999: fig. 11). Boaz' interpretation of 'settlement intensity' is also marked with a line on the graph over the calibrated radiocarbon datings (Fig. 4).

Elk hunting and inland Stone Age settlement

There is no evidence for any change in subsistence on these inland sites during the Stone Age. Bones of elk (*Alces alces*) dominate among the bone finds, with beaver (*Castor fiber*) in a second place.

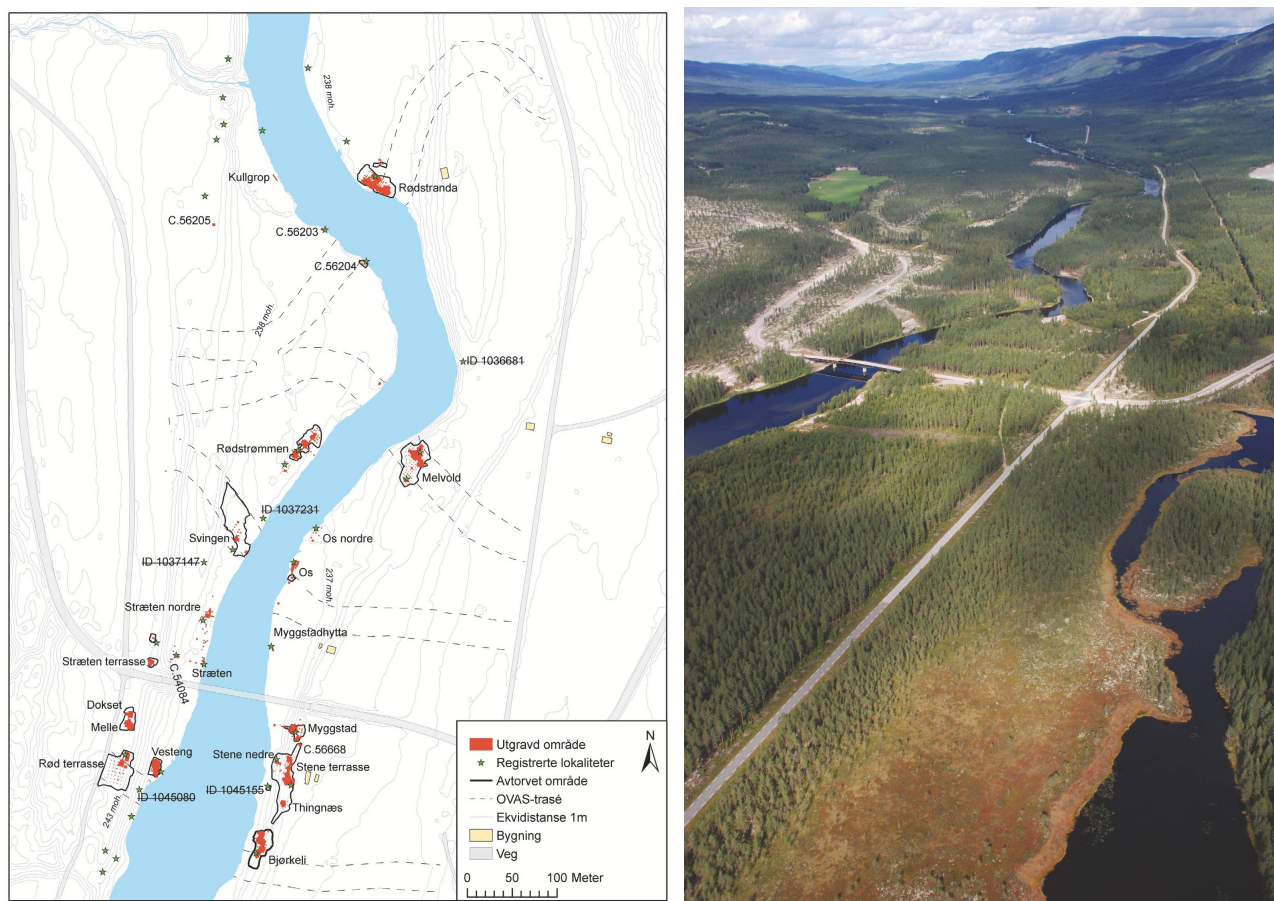


Fig. 1 A/ Stone Age sites investigated at the River Rena, 2004-2007. B/ Aerial photo of the River Rena at the section where the excavations were carried out. Photo: Tom Heibreen, KHM, Oslo University.

The beaver bones are much fewer than elk bones. Beaver is also a smaller animal, so their contribution to the subsistence is relatively low. Other species aside from elk and beaver constitute a minute part of the bone finds. Elk-hunting has been the main subsistence activity for all inland in the Mesolithic with the exception of some areas where reindeer hunting might have been important.

Today elk-hunting is a big business in Sweden, Norway and Finland. In Sweden alone about 100,000 elk are killed per year (Fig. 5). This intensive hunting activity has been the norm for not much more than 50 years. Modern guns that make it easy to kill elk from a long distance are one part of the explanation, but today's high yield is mainly the result of game management administered by the government. The key factor in such management is that there is a 'maximum sustainable yield' that can be calculated and used to direct the hunting (Fig. 6).

A yield is sustainable as long as the number of killed animals is less than the number of calves born each year. The maximum sustainable yield is therefore obtained when the elk population size produces its highest number of calves per year. At a low elk population density, there are few cows and therefore also few calves, while at a very high population density on the other hand, the elk are starving and therefore the number of calves per cow reduced. This means that an intermediate population density will give the highest sustainable yield. A managed population should have regulated hunting to maintain this level.

Another management strategy is to improve conditions for the game and thereby increase and achieve the highest possible population density. Providing food for the game, especially in the winter, is such an action. Yet another one is to concentrate hunting to autumn so that calves are born in peace in the spring, and reducing the number of animals that have to pass through the winter. Such management works by increasing the carrying capacity and, as a consequence here, the rise of the maximum sustainable yield.

The management of elk hunting has increased the elk population in Scandinavia; 100 years ago the elk was close to extinction here. It was not only the lack of hunting management that was the reason for the low number of elk then, but also the fact that a larger part of the land was used for agriculture and those areas were excluded from the elk's grazing land. This makes it probable that there were more elk in the Mesolithic than 100 years ago, but it remains an open question as to whether there were as many as today. This actually depends on whether or not hunting management was applied in the Mesolithic.

Hunting management in the Mesolithic?

One possibility is that the management of elk hunting was introduced in the Late Mesolithic, resulting in a population increase. Such management can produce a major effect in the yield from hunting; a ten-fold increase is likely.

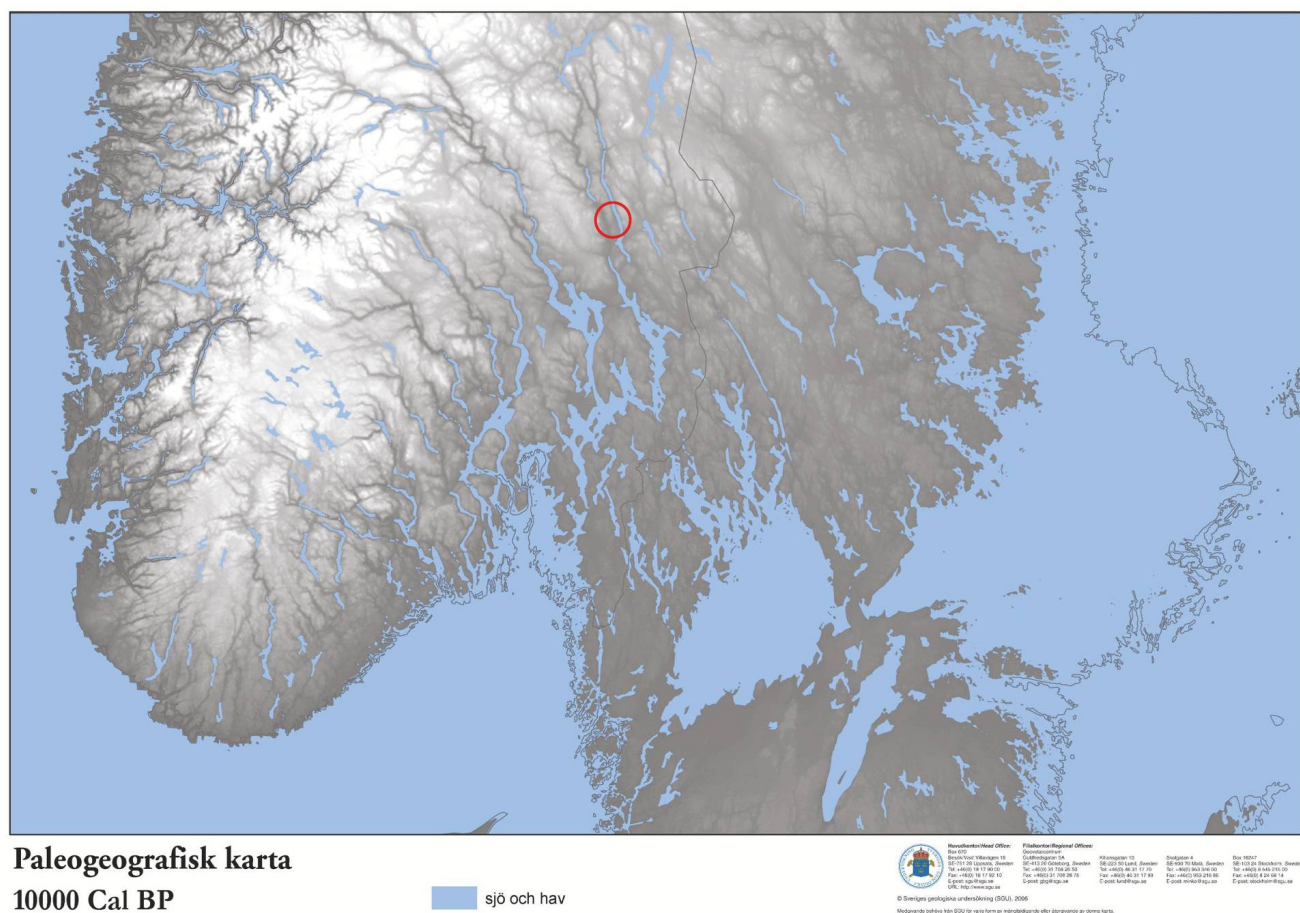


Fig. 2 The Rena area (red circle) on the Scandinavian peninsula. The shoreline at 8000 BC. Map: Tore Pålse, SGU.

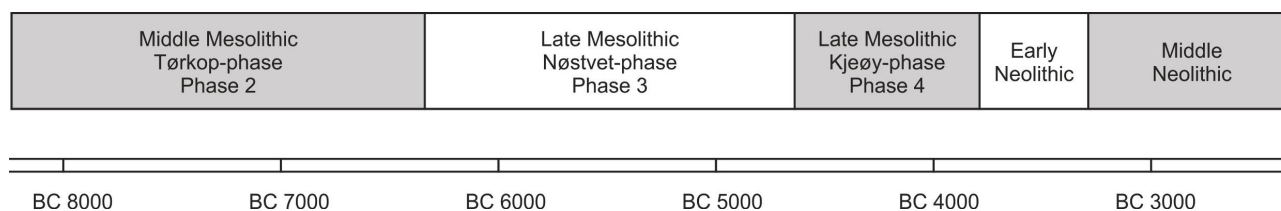


Fig. 3 Main chronological framework for the investigated area (data from Stene 2010: kap 2.2).

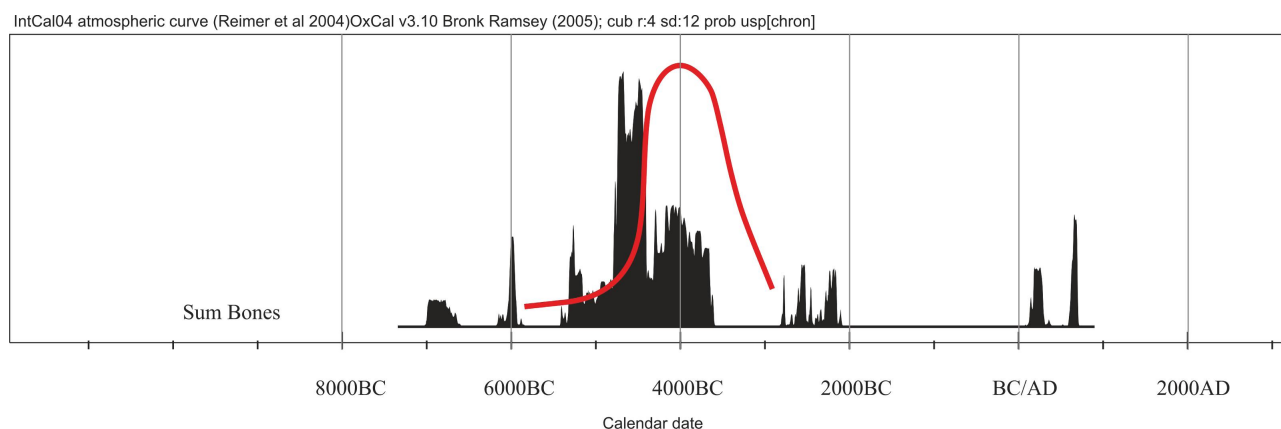


Fig. 4 Accumulated probability distribution for the 29 radiocarbon datings carried out on cremated animal bones from the Rena area. The line shows an earlier interpretation of 'settlement intensity' in the Rena area, by Joel Boaz and based mainly on typological datings (Boaz 1999: fig. 11).

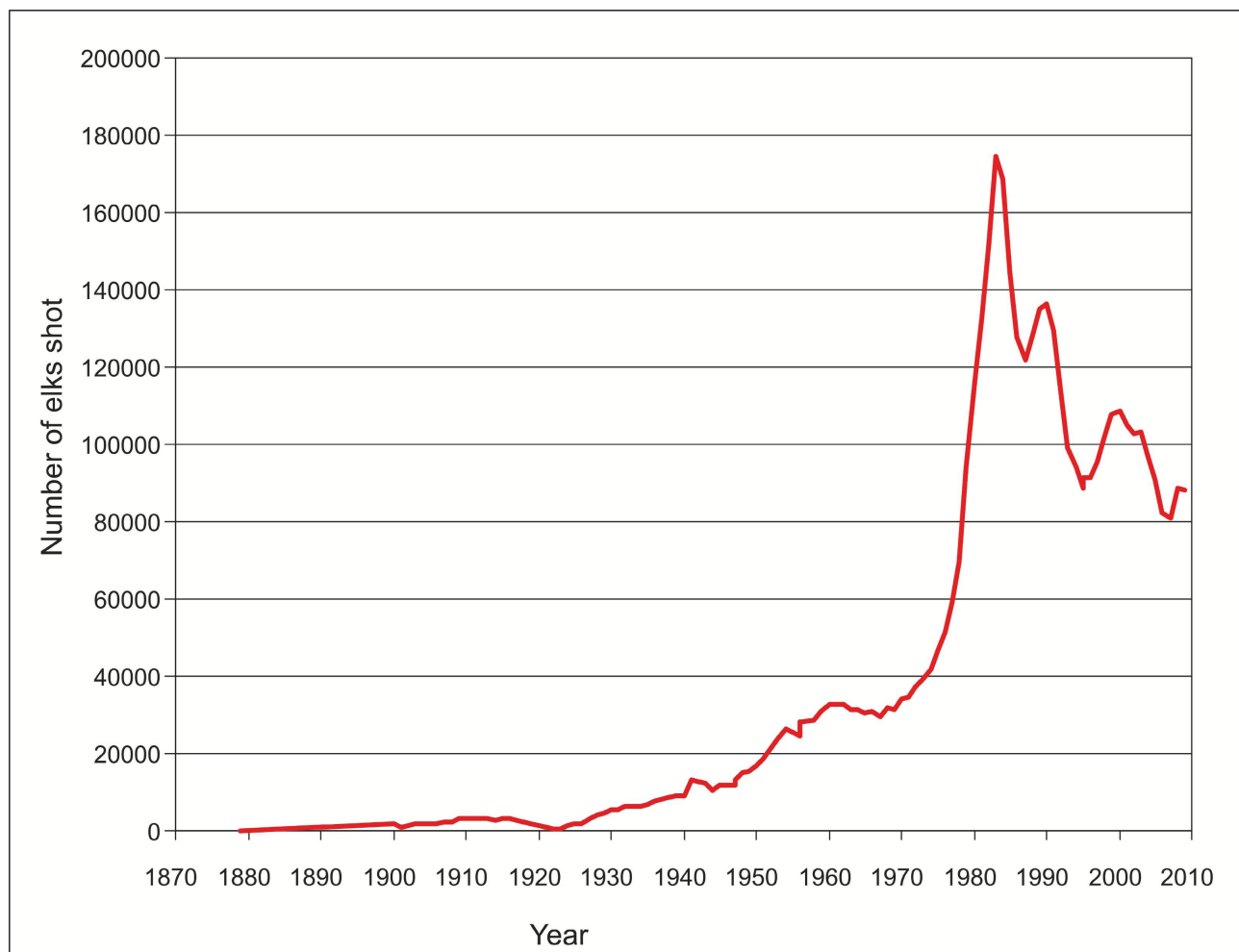


Fig. 5 Number of elk shot per year in Sweden (based on official statistics).

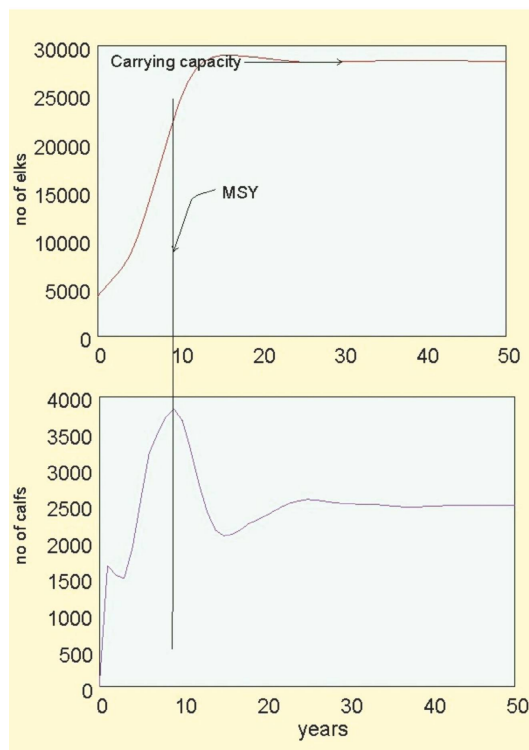
Hunting management is not only about regulating the hunt, winterfeeding and the like, but the hunting of predators living on the game. Brown bear and first and foremost wolves, are predators on elk (Ballard & van Ballenberghe 2007). We do not know if the Mesolithic humans practised any kind of hunting management, but from studies of the behaviour of predators we can be pretty sure they did not. This means that there cannot be any effective management if there are too many non-human elk-predators around, as the unregulated killing of other predators would counteract any action by humans to protect the game. This means that the first management action must be to protect the game from other predators, since without this other attempts at management are bound to fail.

All hunters will gain from reducing non-human predators. But such a reduction also involves extra work and can even be dangerous, as wolves and bears can protect themselves. This puts a price on the hunt of the predators and this cost is not directly connected with the gain. It is not only the individual who kills wolves that gains from the growth of the elk population, but also all elk hunters in the area. This can lead to a problem with cooperation when individuals count on others to do the work, hoping for a free ride, a potential issue in wolf hunting just like in all other management efforts.

In a small group there can be regulations that encourage and ensure cooperation. For example, there may be a division of

labour, awards for good behaviour, punishment for bad behaviour, etc. All this might work well in small groups with tight social control and in a small area around the settlement. However, it can be harder to arrange for large areas like wolf-territories and elk hunting grounds, areas that can be many hundreds of square kilometres in size. Small groups have no hope of protecting such areas from being used by alien hunters. There is no point in hunting the wolves to protect the elk if it just means that neighbours replace the predators in taking the game. Predator hunting and other management actions demand a control of the territory used for hunting. In today's society this is achieved by the state, which is backed by laws and police. We do not know much about the Mesolithic societies, but we are pretty sure that there were no kings, state, military, etc.

Management of hunting grounds are close akin to agriculture and especially animal husbandry. The main problem for both management of hunting grounds and for agriculture is that there must be an organization that ensures that those who do the work also harvest the result. The organization must in both cases include rather large areas. In the case of agriculture we know that there was such an organization just by the fact that agriculture exists, and because it is hard to see how agriculture could be practiced without it. In the case of elk hunting it is not that easy to discern whether it was on a managed game population or not during the Stone Age, as elk hunting can occur under both these circumstances. The main difference between them is the size of the elk population and



Age	Bulls		Cows		
	Survival	Meat weight	Survival	Meat weight	Fertility
0 år	0,95	70	0,95	66	0,00
1 år	0,97	127	0,97	122	0,00
2 år	0,97	174	0,97	155	0,10
3 år	0,97	189	0,97	166	0,80
4 år	0,97	212	0,97	170	1,25
5 år	0,91	224	0,91	170	1,25
6 år	0,91	224	0,91	174	1,25
7 år	0,91	224	0,91	175	1,25
8 år	0,91	244	0,91	175	1,25
9 år	0,91	244	0,91	171	1,25
10 år	0,90	244	0,90	171	1,25
11 år	0,90	244	0,90	171	1,25
12 år	0,90	244	0,90	171	1,25
13 år	0,75	224	0,90	162	1,25
14 år	0,60	214	0,90	159	1,25
15 år	0,50	204	0,90	156	0,80
16 år	0,00	194	0,90	153	0,70
17 år			0,90	150	0,60
18 år			0,90	147	0,50
19 år			0,80	144	0,40
20 år			0,75	141	0,30
21 år			0,60	138	0,20
22 år			0,50	135	0,10
23 år			0,00	132	0,00

Fig. 6 Result of a simulation of elk population and number of calves, as a function of time, given the data in the tables. This shows that there is an intermediate elk population density that gives the highest number of calves. If hunting management is directed to keep the elk population at this level, then the population can produce the maximum sustainable yield (MSY).

the number of animals killed, and these are figures that are very hard to establish from the archaeological material. On theoretical grounds wolf hunting must be a fundamental part of elk game management. There is however no sign of wolf hunting from the Mesolithic, or from any prehistoric period in Scandinavia. This can be explained by the fact that wolves were not eaten and their bones therefore never ended up on the settlement sites, but how can one then detect if wolf hunting is going on?

Neolithic societies

The expansion in the inland settlement, as shown by the radiocarbon datings made on cremated animal bones, cannot be explained by the introduction of agriculture. In south-eastern Norway there is actually no direct evidence of agriculture before the Late Neolithic around 2000 BC (Prescott 1996). It has however often been assumed that there is an early phase with agriculture in the Oslofjord-inlet area some 130 km south of Rena, contemporary with the first appearance of agriculture in south Scandinavia. The main argument for this is that there are finds ascribed to the funnel beaker (TRB) culture around the Oslofjord. If this is correct the introduction of agriculture should be around 4000 BC just like in south Scandinavia (Persson 1999). But even if this is the case the expansion of inland settlement started more than 500 years earlier than the introduction of agriculture (Fig. 4).

There seems to be a chronological coincidence in that the increase of inland settlement takes place immediately before the introduction of agriculture, if not in Norway so at least in South Scandinavia. The chronological relationship between the introduction of agriculture and the increase of inland settlements might be a hint indicating that a Neolithic type of society was

established before the introduction of domesticated plants and animals. Such a society can provide the organization necessary for the management of elk hunting and thereby give the economic basis for an expansion. At the end of the Late Mesolithic there seems to be an increase in contact between south Scandinavia and Norway as the typological resemblances increase. The Kjeøy Phase /Phase 4 is characterized by arrowheads of the same types as in south Scandinavia, and is dated to 4650 – 3800 BC (Glørstad 2004). South Scandinavia at that time had already been in contact with agricultural societies since 5500 BC, when agricultural LBK settlements were established close by northern Germany and Poland. It has also been proposed that this contact has led to a social change in south Scandinavia before the final introduction of agriculture (Fischer 1982; Jennbert 1984). If this is right it is also possible that this change also affected areas further north.

Conclusions: a model

This is an attempt to formulate a model that can explain an increase of the Late Mesolithic settlement in the central Scandinavian inland, which seems to take place in the Late Mesolithic. The main features of the model are that there were separate inland settlements already established from the onset of the earliest colonization. These societies had a low level of exploitation of nature and due to limitation in the social organization very little management of the resources could take place. From 5500 BC full agricultural farming societies were established in Europe up to the southern shores of the Baltic. These societies influenced the close by coastal groups first in Denmark and southern Sweden and later indirectly also those around the Oslofjord-inlet. This influence led first to a reorganization of the society so that the ‘under used’ natural resources could be better used to their full

potential. Later, domesticated plants and animals were introduced and replaced the local traditional food in the areas most suitable to agriculture. The influences from Neolithic societies reached the central Scandinavian inland before the domesticated plants and animals and, according to this model, it enabled the establishment of cooperation over wider areas, establishment of group territory, hunting management and thereby realized the potential for population increase that is possible from more efficient elk hunting.

Today we know close to nothing about the Mesolithic society in Norway. One way to learn more can be to find methods to detect whether hunting management was in use. The radiocarbon date from cremated bones from the Rena river sites, presented here, provides an indication that they were. However, other explanations are possible.

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THE STONE AGE FLOOD IN DENMARK AND MESOPOTAMIA

Anders Fischer

Abstract: During Kristian Kristiansen's years as head of the Archaeological Heritage Administration in Denmark, underwater archaeologists from this country located numerous traces of inundated Stone Age settlements and forests. These sites had disappeared beneath the waves due to a global rise in sea level. In Mesopotamia (present-day Iraq) this sea level change has similarly resulted in the dramatic inundation of inhabited land prior to c. 3500 BC. Mesopotamia is also the source of the earliest known versions of the myth of the Flood; the origin of this myth fades into the prehistoric past prior to c. 2600 BC. Therefore, it is not possible to say for certain whether this narrative has its roots in the actual Stone Age flooding event. Nonetheless, the dramatic events recounted in the flood myth can be taken as a symbolic expression for the hardships experienced by the inhabitants of coastal plains around the world who fell victim to the great rise in sea level.

Keywords: Flood, Noah, sea level, submerged, Mesolithic, Neolithic, Denmark, Great Belt, Mesopotamia

Prehistorians take the plunge

In 1979, Kristian Kristiansen was appointed to his first permanent position. At the age of only 31 he became head of the Danish Archaeological Heritage Administration in *Fredningsstyrelsen*, the Danish government's agency for cultural heritage and nature protection. With his appointment, a leading position in Danish archaeology became occupied by a person who embraced research, management and leadership at an advanced level. His appointment led to a veritable wave of professional and organizational innovations, the benefits of which are still being felt today.

One of the new professional departures for which Kristian acted as godfather was the establishment of systematic recording and protection of the prehistoric cultural heritage on the Danish seabed. This took place in fertile collaboration with the director of *Fredningsstyrelsen*, archaeologist and lawyer Viggo Nielsen. As a result of this initiative, a first insight was gained on Danish territory into the landscapes and habitations which, all around the world, had disappeared beneath the waves with the melting of the ice caps formed during the most recent Ice Age (e.g. Kristiansen & Tønnesen 1983; Kristiansen & Fischer 1987; Nielsen 1987; Fischer 1993). Large numbers of Stone Age settlements that had



Fig. 1 On the lookout for the submerged childhood home. In the Lateglacial and the first half of the Postglacial, enormous areas of land were engulfed by the sea. Was it this prolonged and probably at times traumatic event which, after many generations of oral and written transmission, was committed to text as the Bible's account of the Flood? Drawing: Henning E. Jensen.

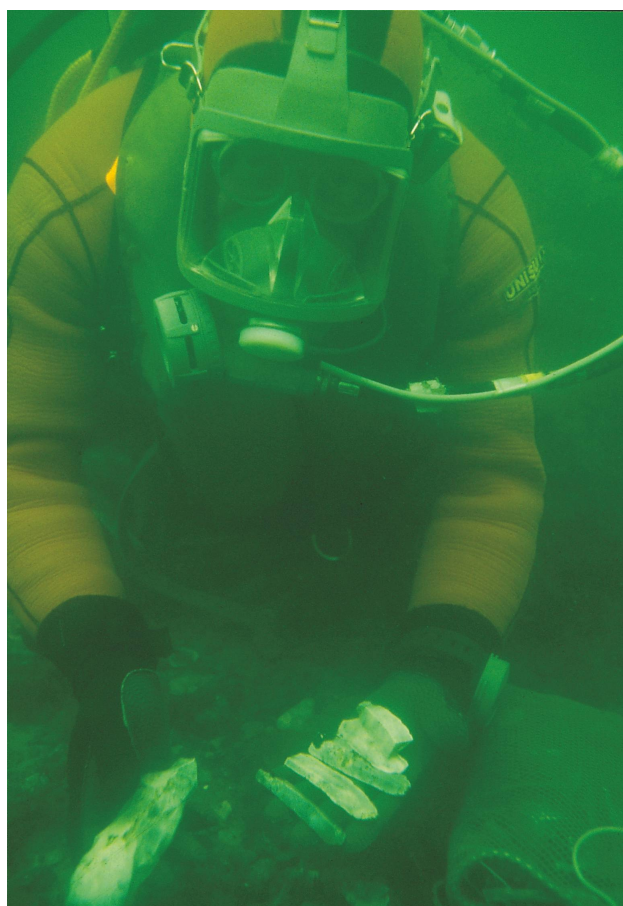


Fig. 2 Evidence of submerged Stone Age settlement: Recovering flint artefacts on the c. 8000-year-old settlement of Stavreshoved, at a depth of 8-9 m in the Great Belt, Denmark. Photo: Anders Fischer.

been swallowed up by the sea (Fig. 1) were located (Fig. 2), as were numerous stumps of trees that had been killed and preserved by the rapidly rising sea level (Fig. 3).

Among archaeologists in *Fredningsstyrelsen* – and with Kristian Kristiansen as an active and committed participant – there was a lively discussion concerning whether the Old Testament's myth about the Flood could have arisen under the influence of the major rise in world sea level seen during the Stone Age, i.e. during the Lateglacial and the first half of the Postglacial (cf. Flemming 1972: 23-25; Petersen 1991). The existence of numerous narratives from all over the globe describing a universal prehistoric submergence (e.g. Cohn 1996: xi; Flood 2001: 215) could be taken in support of this theory. An evaluation of the hypothesis was produced for a book detailing the archaeological results achieved via the construction of the fixed link across the Danish Great Belt (Fig. 5) (Pedersen et al. 1997) – a book which Kristian Kristiansen was, of course, actively involved in at the outset. However, Kristian moved on to new professional challenges in Sweden, and when the book was published the article on the Stone Age Flood had been omitted. The following paper is a slightly revised version of this manuscript with an updated sea-level curve, produced for Kristian's delectation – and, hopefully, also that of others sharing his interests in cross-disciplinary research.

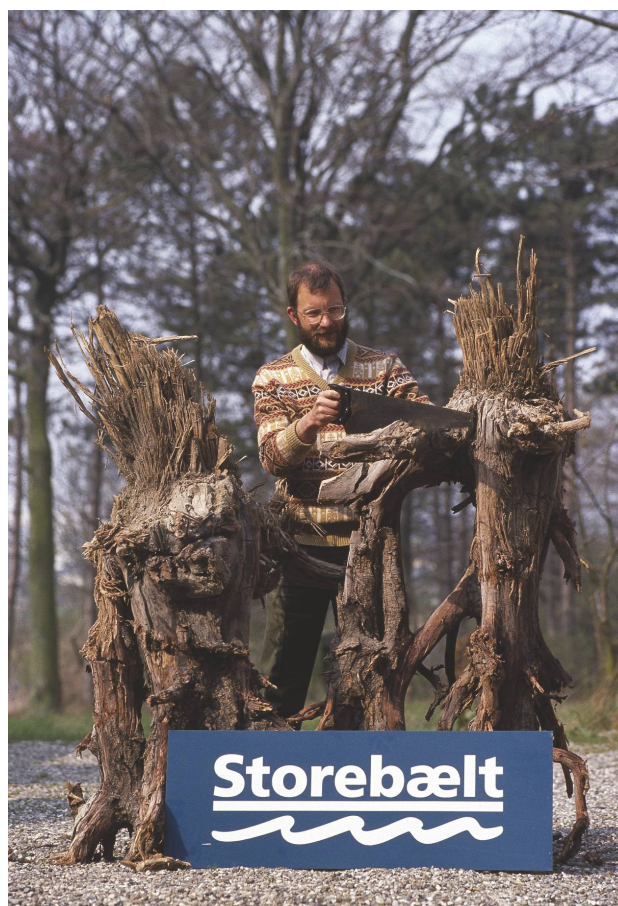


Fig. 3 Samples for radiocarbon dating are sawn off 10,000-year-old pine stumps which were hauled up from a depth of 30 m in the Great Belt. Photo: Søren Madsen, A/S The Great Belt Fixed Link.

The great rise in sea level

The oceans of the world rose around 120 m during the period between c. 17,000 and 3500 BC (calibrated calendar years before Christ) (Fairbanks 1989; Blanchon & Shaw 1995; Bard et al. 1996). The later phases of this sea-level rise are extensively documented by, for example, the archaeological investigations carried out in connection with the establishment of the bridge and tunnel across the Great Belt (Fischer 1995, 1997; Christensen et al. 1997; cf. Fischer & Hansen 2005). In the course of the latter, a large number of secure fixed points were established for sea level and for shoreline displacement. These took the form of, for example, hearths, rooted (in situ) tree stumps and stationary fishing weirs. Fixed points such as these, of precisely known age and depth, form the basis of the shoreline-displacement curve shown in Figure 4. The latter demonstrates that the sea level in the Great Belt rose by about 30 metres between 6900 and 3600 BC. During the period 6900-5900 BC, the average sea-level rise was in the order of 2 metres per century. Over shorter periods it was actually considerably greater, since the general rise in sea level was interrupted by periods of regression (Fig. 4; cf. Christensen et al. 1997; Yu et al. 2007).

Apparently, the Great Belt was not subjected to significant faults or subsidence in the earth's surface during the period in question

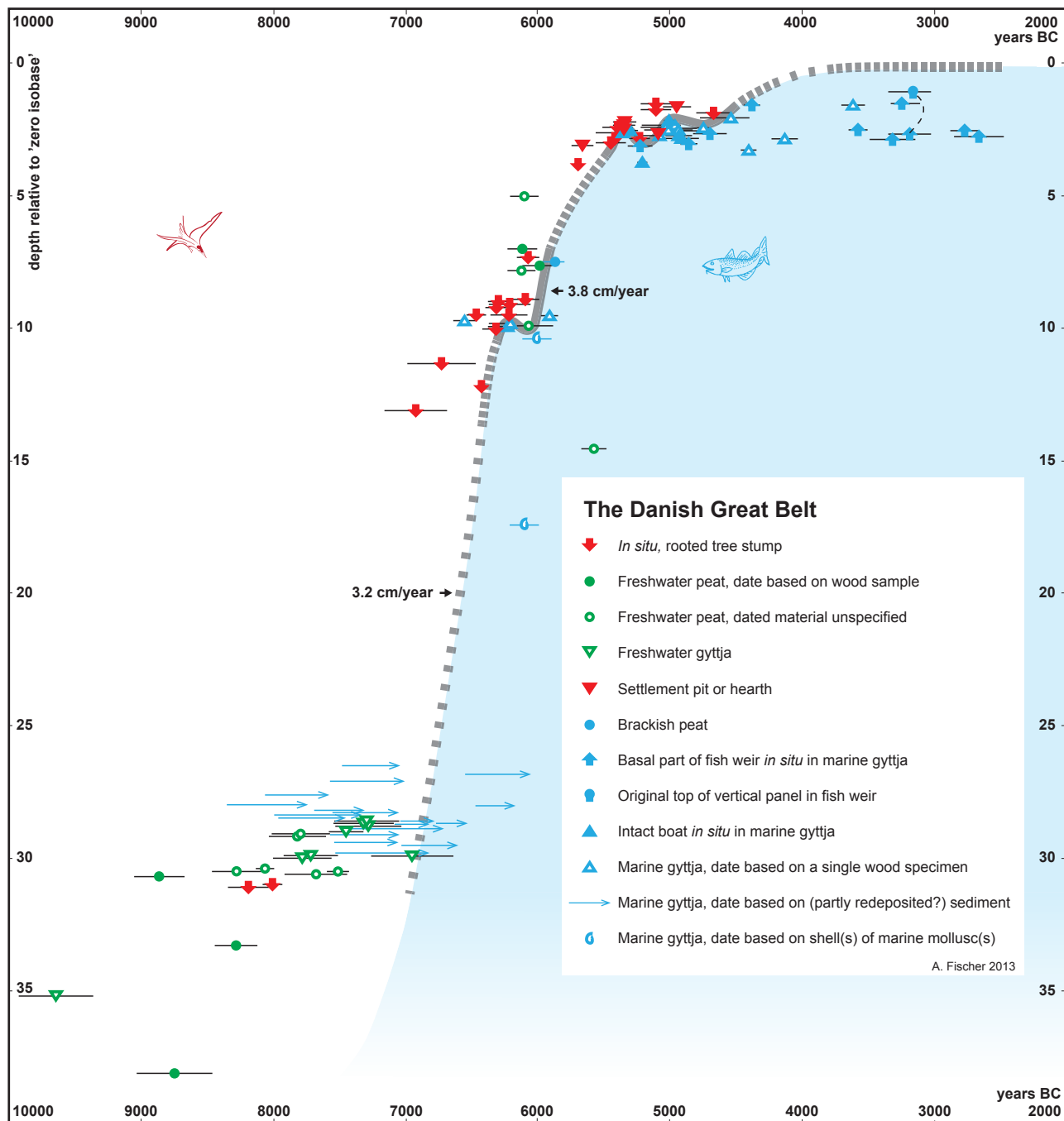


Fig. 4 Sea-level rise in the Great Belt. The graph is based on radiocarbon-dated phenomena located on the contemporary land surface and seabed. These fix points are shown as geometric symbols placed on horizontal lines that represent ± 1 standard deviation. The most exact data points are shown as solid symbols. Most of these derive from archaeological fieldwork. Recorded depths have been adjusted to take account of isostatic uplift subsidence since the maximum extent of the Litorina Sea. Dates for gyttja sediment samples from geological cores (depth > 26m) may be significantly older than their actual time of deposition due to contamination by material washed in from older deposits. The method and most of the data that form the basis for the graph are presented in Fischer 1991, 1995; Christensen 1995; Christensen et al. 1997; Fischer & Pedersen 1997. The undulations in the sea-level curve are the result of climatic variation. The most pronounced of these, around 6200 BC, probably relates to a decline in temperature that was first observed in Greenland ice cores (Johnsen et al. 1992) and subsequently demonstrated in several other locations in the northern hemisphere (e.g. Hede et al. 2010).

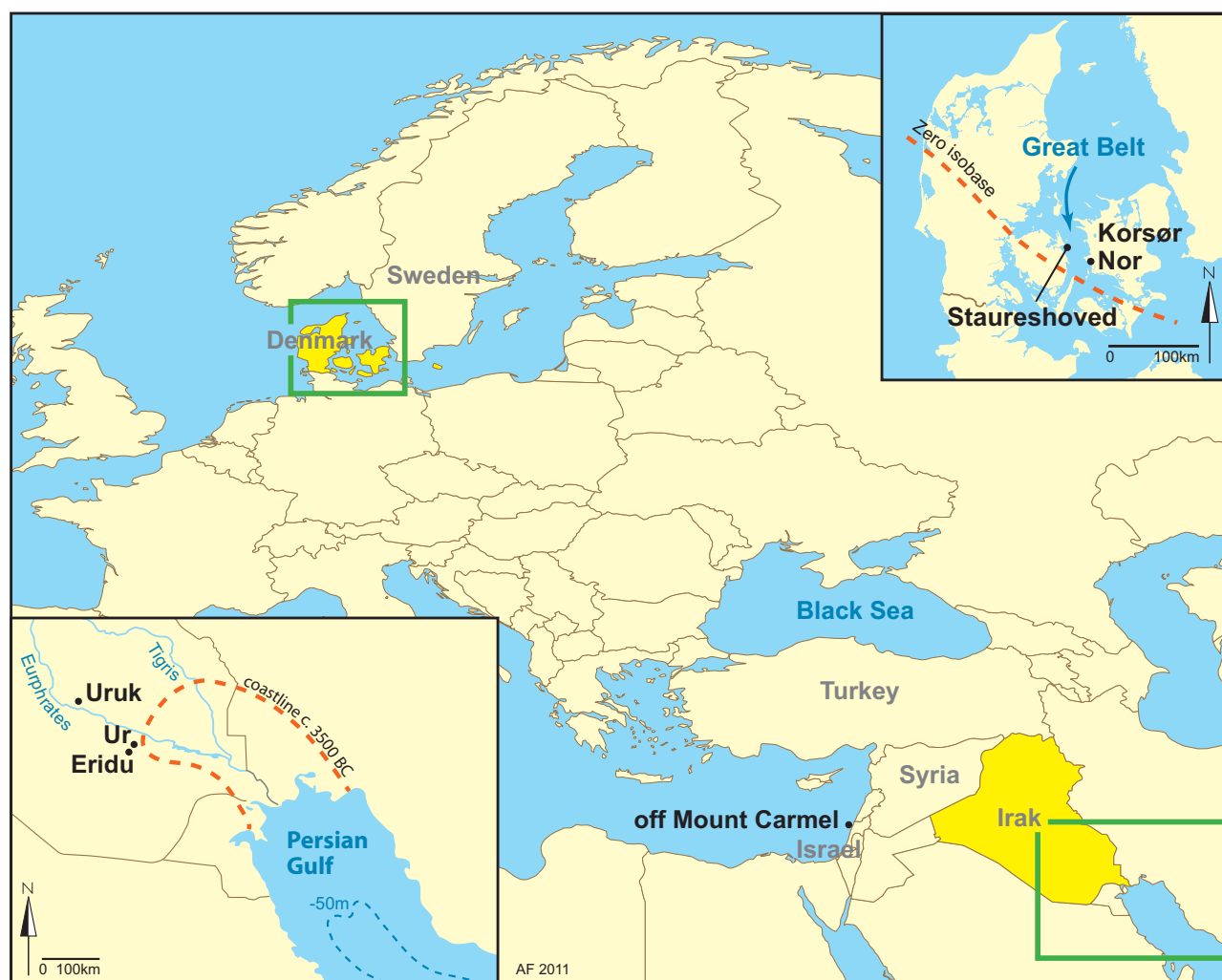


Fig. 5 Geographic phenomena and archaeological localities mentioned in this article.

(Mertz 1924; Mörner 1969; Lampe et al. 2007). This means that the sea-level changes shown in Figure 4 must, on the whole, also reflect the situation in oceans globally.

In Europe, the rise in sea level resulted in the habitable area being reduced by approximately one third during the millennia subsequent to 17,000 BC (Bailey 2011). As will become apparent from the following, populations in other parts of the world experienced corresponding dramatic territorial losses.

Vulnerable coastal settlements in Denmark and Israel

There was a price to be paid for living on the coast during the time of the great sea-level rise. Many a Stone Age person would, accordingly, have seen their ancestors' graves and the settlements of their childhood disappear beneath the waves (Fig. 1). Nevertheless, during the final millennia of the Mesolithic and the first centuries of the Neolithic (c. 6500-3700 BC) the inhabitants of the area we today call Denmark preferred living directly by the sea-shore (Fischer 1997). They spent their time, figuratively speaking, with 'their feet in the waves'. The primary reason for this behaviour was, no doubt, the particularly good opportunities to obtain food. Faunal remains recovered from the settlements demonstrate that fishing contributed considerably to

their subsistence, and gathering shellfish and hunting seals and whales were also important (Aaris-Sørensen 1982; Andersen 1995, 2009; cf. Tauber 1981; Fischer et al. 2007a, 2007b). The great importance of fishing is also apparent from the many remnants of fixed wooden fishing weirs and traps that stand in layers of marine gyttja offshore from the settlements of the time (Pedersen 1997; Fischer 2007). The population's close links with the sea are further demonstrated by the fact that all the graves from the period have been located on coastal settlements (Nielsen & Petersen 1993).

The tendencies towards coastal settlement and marine diet were not just characteristic of the population in Denmark during the later millennia of the great sea-level rise. These preferences also applied to other contemporary populations in many coastal regions of the world. However, it is more difficult to discover whether these trends were just as widespread in earlier epochs. In most places on the earth, the coastlines of these early times now lie hidden deep below the surface of the sea and, as a consequence, have not as yet been the subject of detailed archaeological research (although, see the contributions relating to Norway and Sweden in Fischer 1995). However, the results of archaeological investigations on the seabed out to a depth of c. 12 metres off Mount Carmel in Israel (Fig. 5) do point in this direction. Extensive Neolithic settlements and cemeteries have been uncovered here which extend back to

c. 7200 BC. The finds show that marine food resources played a significant nutritional role and that here too, with time, people were forced to move their settlements gradually higher up in the terrain as the sea advanced (Galili & Rosen 2011).

Rising sea level in Mesopotamia

The settlements on the seabed off Mount Carmel illustrate that extensive prehistoric human activity areas disappeared beneath the waves in the Biblical Countries as a consequence of the great rise in sea level. This should not, however, be taken as indication of the Old Testament's account of the Flood having its roots in events which took place on the coast of Israel – or even by the Black Sea, as has been recently discussed (Ryan & Pitman 2000; see also Yanko-Hombach et al. 2011). The origins of the myth should more probably be sought in the actual geographic area to which the early versions of the account refer and from where the oldest known versions actually originate, namely Mesopotamia in present-day Iraq (cf. Kennett & Kennett 2007).

Mesopotamia, the flood plain around the rivers Euphrates and Tigris, neighbouring the Persian Gulf (Fig. 5), is one of the places in the world where the Stone Age rise in sea level had particularly dramatic consequences. Here, because the landscape is exceptionally flat, the change in water level resulted, in global terms, in unusually rapid shoreline displacement. Furthermore, the inundation would probably have affected a relatively large number of people as the delta area, with its favourable conditions for fishing, gathering, hunting and agriculture, would, no doubt, have been relatively densely populated.

The available geological data suggest that southern Mesopotamia has not been subject to significant subsidence or faults in the earth's crust for many millennia. Any shoreline displacement must, therefore, as in the case of the Great Belt, be primarily the result of sea-level change as a consequence of the melting or growth of

The account of the Flood figures as an independent story in the Epic of Gilgamesh which is considered to be the world's earliest known literary work. In this, the myth of the Flood is presented as an eyewitness account by Utnapishtim the Far-Away, a mythical character who corresponds to the Old Testament's Noah. Utnapishtim tells of the dramatic flooding disaster (reproduced here after Sanders 1987; the characters named are Mesopotamian gods):

... In those days the world teemed, the people multiplied, the world bellowed like a wild bull, and the great god was aroused by the clamour. Enlil heard the clamour and he said to the gods of council, "The uproar of mankind is intolerable and sleep is no longer possible by reason of the babel." So the gods agreed to exterminate mankind. ... With the first light of dawn a black cloud came from the horizon; it thundered within where Adad, lord of the storm was riding. In front over hill and plain Shullat and Hanish, heralds of the storm, led on. Then the gods of the abyss rose up; Nergal pulled out the dams of the nether waters, Ninurta the war-lord threw down the dykes ... For six days and six nights the winds blew, torrent and tempest and flood overwhelmed the world, tempest and flood raged together like warring hosts. When the seventh day dawned the storm from the south subsided, the sea grew calm, the flood was stilled; I looked at the face of the world and there was silence, all mankind was turned to clay.

The Old Testament's account of the Flood takes as its starting point – just as the flood disaster in the Epic of Gilgamesh – a situation which provoked divine rage (references below to chapter and verse in the book of Genesis, the Church of England authorized UK version of the Holy Bible – The King James Bible; <http://www.thebible.co.uk/index.html>):

The people had become a multitude (6.1) and human life was characterized by evil (6.5) and violence (6.11). The Lord then decided to wipe out mankind with an all-encompassing flood. The honourable and god-fearing Noah was, however, chosen to survive in a vessel in which, according to instructions from God, he placed on board his family and a pair of every species of animal and bird on earth. When they were all on board '...all the fountains of the great deep broken up, and the windows of heaven were opened...' (7.11). 'And the flood was forty days upon the earth...' (7.17). '... And every living substance was destroyed which was upon the face of the ground, both man, and cattle, and the creeping things, and the fowl of the heaven; and they were destroyed from the earth: and Noah only remained alive, and they that were with him in the ark...' (7.23).

glaciers (Larsen 1975; Ambraseys 1978; Sanlaville 1989; Pirazoli 1991; cf. Lambeck 1996). Accordingly, the curve for the sea-level rise in the Great Belt (Fig. 4), which is based on a relatively large number of precise fixed points, should in its general outline also apply to Mesopotamia.

The water depth in the inner part of the Persian Gulf is modest. For example, the distance between the present day 50 metre depth curve on the sea charts and the present-day shore of the river delta is c. 240 kilometres (Fig. 5). However, the modern coastline far from corresponds with the highest Postglacial coastline. This is due in particular to the constant accumulation of river sediments which has caused the delta to grow out over the former seabed (Larsen 1975; Sanlaville 1989; cf. Lambeck 1996). Sumerian texts from the third millennium BC report, accordingly, that the ancient cities of Eridu and Ur lay in close proximity to the sea (Sanlaville 1989). These localities have since been identified archaeologically as large tell sites (Woolley 1955). The latter is also known from the Old Testament as 'Ur of the Chaldees'. It now lies c. 280 kilometres from the modern coast and its earliest occupation layers, which predate 4000 BC, are located just 1 metre above present sea level (Larsen 1975; Sanlaville 1989).

The general slope of the lower part of the Mesopotamian flood plain was therefore exceedingly slight: a total fall of around 51 metres over a distance of c. 520 kilometres (a gradient of 1 in c. 10,000). Sea-level curves from other parts of the world (e.g. Fairbanks 1989) show that the abovementioned land area, from 50 metres below to 1 metre above present sea level, became inundated in the period between c. 9000 and 3500 BC. The shoreline displacement in southern Mesopotamia can consequently be calculated to an average of c. 95 metres per year or, roughly speaking, a couple of kilometres per generation. Evaluated against the background of the sea-level curve for the Great Belt as mentioned above, the average coastal migration on the Euphrates-Tigris flood plain reached 6 - 8 kilometres per generation around 6000 BC. Along the coast of this region the global sea-level rise could combine its effects with local and regional climate extremes to cause submergence of huge inhabited areas within days. Storms from the south could intermittently press up the sea level along the coast, the water level in the rivers could rise markedly due to long periods of heavy precipitation in the hinterlands, and local



Fig. 6 Two skulls from the submerged settlement and burial place of Korsør Nor in the Great Belt. Both show healed lesions caused by blows; probably received from a club and an axe, respectively. About half of the Danish skulls of adult males, dated to the time of the great rise in sea level, show signs of violence. Are these an expression of economic and social conflicts in the wake of the inundation? After Bennike (1997). Photo: Henrik Wichmann.

cloudbursts could make the landscape soak in water. In such situations of combined effects, the local population may very well have experienced flooding drama to such an extent that it could have formed the basis of myths which were passed down over a very long period of time.

Dating the Flood myth

The myth of Noah and the Flood forms part of Jewish, Muslim and Christian traditions (Schmidt 1995; Cohn 1996). Variants of it were also in circulation among the Romans and Greeks of antiquity. The earliest documented versions of the account are written in cuneiform characters on clay tablets found during archaeological excavations in Syria, Turkey and, especially, Iraq (Sandars 1987). They belong to the Sumerian cultural epoch and date from c. 2000 to c. 1700 BC (Alster 1995; Schmidt 1995). As the world's first written language and fictional style of expression emerged in Mesopotamia precisely during this period, older written versions of the myth cannot be traced.

The account of the Flood is included in the poetic cycle about the legendary hero Gilgamesh (see text box 1). The Sumerian King Lists reveal that he was the fifth king of Uruk following the world-wide inundation (Sandars 1987). There is such precise agreement between the archaeological and the historical sources from Mesopotamia that it has proved possible to establish the exact location of Uruk (Fig. 5) and the fact that Gilgamesh was ruler here for a time during the period from c. 2700 to 2500 BC (Sandars 1987).

Conclusion - the Flood as an allegory

The lack of written sources of epic character from the time prior to 2000 BC, means that it is not possible to prove or disprove the

theory of a link between the great Stone Age rise in sea level and the myth of the Flood. Conversely, there can be no doubt that the inescapable and, at times, dramatically rapid submergence of fertile coastal plains presented enormous challenges to mankind – both in Mesopotamia and elsewhere across the world. The difficulties faced by coastal populations of the time were two-sided: Firstly, these people were forced to abandon landscapes of which they possessed the detailed local knowledge and the necessary technology for the maintenance of life and culture, and with which they must have been tightly bound both emotionally and religiously. Secondly, they had to move into territories which were already inhabited by other people who did not necessarily receive them in an hospitable fashion (Fig. 6).

Both the Old Testament and the Sumerian myths relate that it was widespread unrest and conflict which caused God (the gods) to punish people with the great Flood. Widespread unrest and conflict must also have been experienced by the inhabitants of the flat coastal region of Mesopotamia as a consequence of the geographic, economic and social changes which the rise in sea level forced upon the affected societies. The myth of the Flood could therefore have arisen as an explanation for this series of events, the ultimate causes of which the people of that time did not have the least chance of understanding. In any event, the term 'the Flood' can be used as a symbolic expression for the troubles which the inhabitants of the world's coastal areas experienced at the culmination of the great rise in sea level during the Stone Age.

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VEGETARIANS OR MEAT EATERS?

ENAMEL $\delta^{13}\text{C}$ AND NEOLITHIC DIET AT THE FRÄLSEGÅRDEN PASSAGE TOMB, CENTRAL SWEDEN

Karl-Göran Sjögren and T. Douglas Price

Abstract: In recent years several authors have studied Neolithic diet based on $\delta^{13}\text{C}$ and $\delta^{15}\text{N}$ values in human bone collagen. Since in particular the $\delta^{15}\text{N}$ values have turned out to be quite high, the general conclusion has been that Neolithic humans occupied a high position in the food chain, in other words that animals provided the bulk of the diet. However, measurements on collagen provide only a partial view of prehistoric food patterns, since this molecule is produced primarily by the protein component of diet, while fats and hydrocarbonates contribute very little. Therefore, complementary methods are needed to study the composition of the whole diet. One such method involves $\delta^{13}\text{C}$ values in enamel or bone carbonate. We present here the first series of $\delta^{13}\text{C}$ measurements made on enamel carbonate. These results from a passage grave at Frälsegården in Falbygden, Sweden, give a different picture, suggesting the substantial contribution of plant foods to the total diet.

Keywords: Key words: Neolithic diet, megalithic tombs, Falbygden, Frälsegården, light stable isotopes, carbonate ^{13}C

Introduction

This paper is dedicated to Kristian Kristiansen on the joyous occasion of his 65th birthday. One of Kristian's more important, yet less well known roles is as a connector. He connects objects, places, funding, and people in order to get archaeology done. We got to know each other a number of years ago in the context of the Coast to Coast Project, a large research project to promote PhDs at Göteborg, Uppsala, and Lund. From those meetings we developed a friendship and collaboration concerned with isotopes and early farmers (and their animals) that has produced some exciting new information on the Early Neolithic. There must be hundreds of such examples of connections fostered and facilitated by Kristian. There are of course other facets of Kristian to appreciate — his big picture perspective, fund raising abilities, piano playing, and innate charm. This short note is simply to say thanks to Kristian for all that he has done.

Today, about 525 dolmens and passage graves are known in Sweden. These tombs were built c. 3300-3000 BC cal, i.e. during the transition between the early and the middle Neolithic periods, in the cultural setting of the Funnel Beaker (TRB) culture (Persson & Sjögren 2001; Sjögren 2003, 2011).

The Swedish tombs occur in two distinct landscapes. In Scania, Halland and Bohuslän, they are found close to the coast, in many cases virtually on the Neolithic shoreline. The second and larger group of tombs is found in the inland area of Falbygden in Västergötland. Here, a remarkable concentration of at least 255 tombs (almost half of the Swedish total) coincides with one of the very few places in the region where bedrock consists of limestone and slate instead of Precambrian rocks (Sjögren 2010).

The Falbygden area is an excellent region for isotopic studies of human skeletal remains. Because of the calcareous soils, bones are generally well preserved at archaeological sites. Moreover, many of the tombs and the skeletons they hold have been examined in detail (Persson & Sjögren 2001; Ahlström 2009).

Indications of subsistence practices are available from a number of sources, such as pollen, macrofossils and animal bone refuse (Sjögren 2003). The clearest evidence comes from the parish of Karleby in the centre of Falbygden, where systematic surveys have been carried out. Excavations have been undertaken at three settlement sites, Lillegården (Persson 1992), Logården (Englund & Sjögren 1994) and Godegården (Sjögren 2007). The best preserved animal bones come from Logården and Godegården. The bone assemblages were completely dominated by domestic species, i.e., cattle, sheep and pigs, with only isolated examples from wild animals or fish (Fig. 2).

Cultivation of wheat and barley is attested through impressions of grains in pottery and a few carbonized seeds. Grazing and cultivation are also indicated in pollen diagrams (Sjögren 2003). In addition to cereals, some other plant foods were most likely also cultivated, although they are rarely preserved in archaeological contexts. Cultivation of peas and beans is sometimes attested and was probably widespread, while the history of root crops such as turnip, carrot and other such vegetables is largely unknown (Sjögren 2003). Their role in Neolithic subsistence is not possible to determine at present, but turnip was a staple food before the introduction of potatoes and was potentially also important in prehistory.

The predominance of domesticated resources in the middle Neolithic TRB of Falbygden seems clear. The relative importance of cereals and other plants versus animal foods is a matter of debate. Based on stable isotope analysis, mainly high $\delta^{15}\text{N}$ collagen values, Lidén (1995) suggested the predominance of animal husbandry, but this conclusion has been questioned (Sjögren 2003). In recent years, a number of stable isotope studies on collagen have largely confirmed Lidén's results, even if the conclusions are open to discussion (Hinders 2011; Fornander 2011).

At the same time, it has become increasingly clear that collagen isotope ratios only tell part of the story, since they come mainly

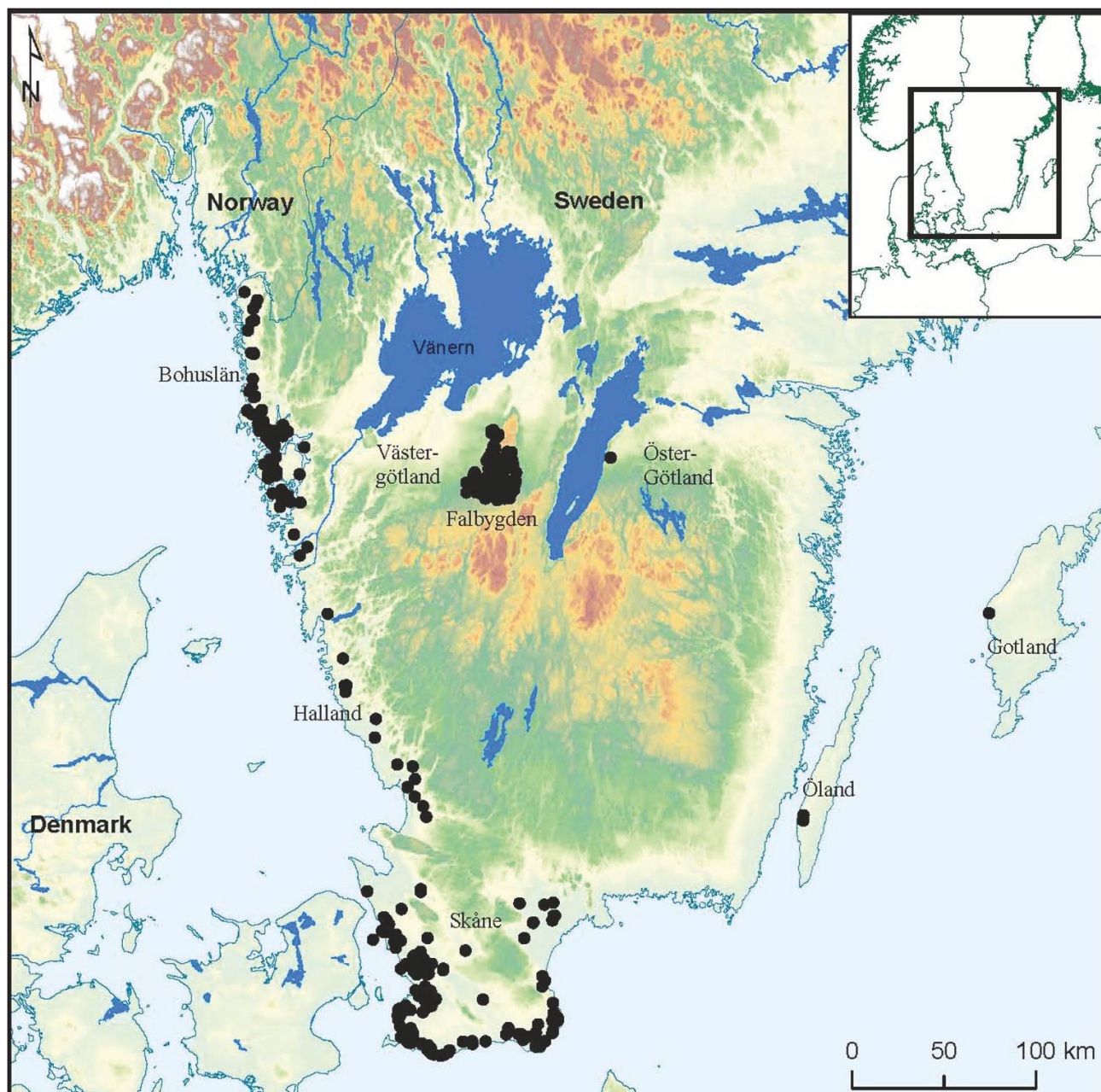


Fig. 1 Map of Sweden with the distribution of dolmens and passage graves.

from the protein component of the diet. Fats and carbohydrates contribute very little to collagen production. Only in situations of protein deficiency may some non-essential amino acids be synthesized from other food components (Ambrose & Norr 1993). Further, the interpretation of $\delta^{15}\text{N}$ collagen values may be less straightforward than originally assumed. We therefore need complementary methods that address the composition of the whole diet. One promising method is the analysis of $\delta^{13}\text{C}$ in enamel carbonate in conjunction with $\delta^{13}\text{C}$ in collagen (Ambrose & Norr 1993; Ambrose et al. 1997). Here, we report the results of a series of $\delta^{13}\text{C}$ carbonate measurements on teeth from the passage grave at Frälsegården in Falbygden, and discuss the implications of the results for our understanding of Neolithic subsistence in the area.

The Frälsegården passage grave

The passage grave at Frälsegården in Gökhem parish was

excavated 1999-2001 (Axelsson & Sjögren 20001; Sjögren 2008). While disturbed by destruction and ploughing, the chamber floor was still largely intact, and many details about the construction could be recovered. The chamber was large, about 9.5 m by 1.8 m, somewhat longer than the average in the area. It was not quite rectangular, since it was narrower towards the gables, where it was about 1.5 m wide. This chamber form is quite common in Falbygden. The passage was 0.9 m wide and at least 8.6 m long, but possibly as much as 10.5 m.

A large bone material with more than 9,800 bone fragments was recovered. Notably, a number of individuals in various states of articulation were recorded, as well as a mass of disarticulated fragments. The exact location of most of the bones was measured with a total station and entered in a GIS database. Osteological analysis was done by Torbjörn Ahlström (2009). The bones have also been subjected to a series of scientific analyses, such as

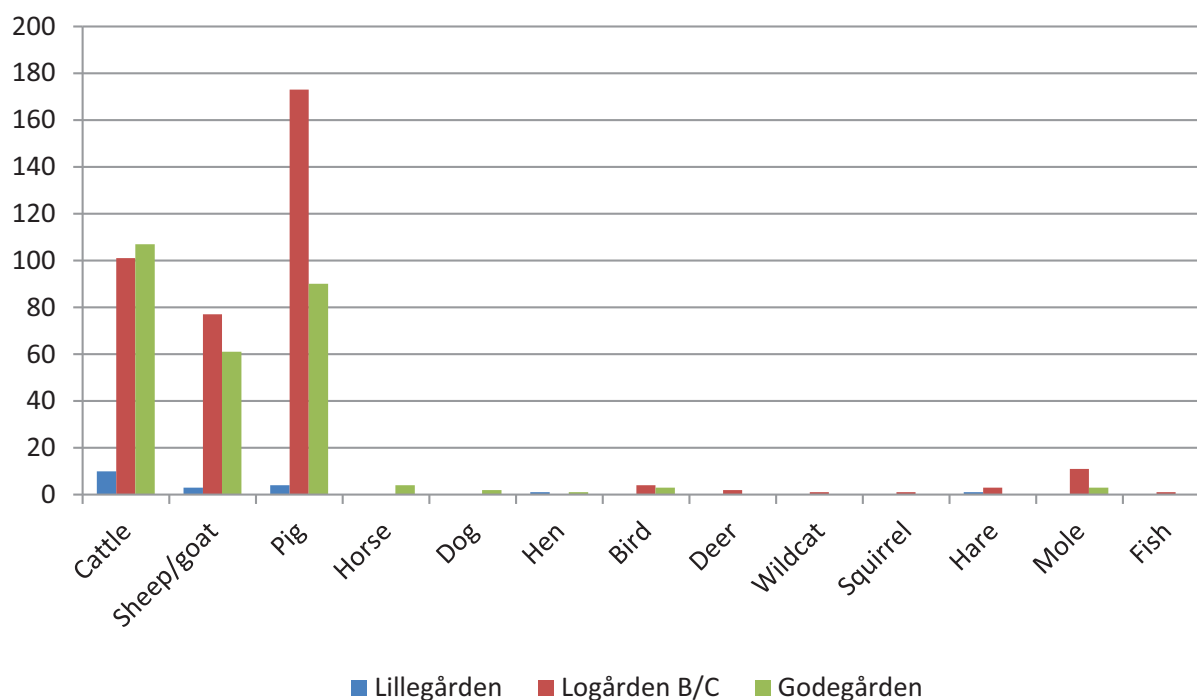


Fig. 2 Identified animal bones (NISP) at Lillegården, Logården and Godegården. Data from Sjögren 2003: table 7:1 and Sjögren 2007: table 2. Uncertain determinations excluded.

aDNA (Malmström 2007; Skoglund et al. 2012), strontium isotope analyses (Sjögren et al. 2009), ^{14}C -dating, and sulphur and light isotope analysis (Hinders 2011; Ahlström & Sjögren forthcoming).

Carbon and nitrogen isotopes in bone collagen

A number of authors have measured $\delta^{13}\text{C}$ and $\delta^{15}\text{N}$ on collagen in human bones from passage graves and gallery graves in Falbygden and other areas in order to obtain information relevant to Neolithic subsistence and food habits (Lidén 1995; Eriksson 2003; Linderholm 2008; Fornander 2011; Hinders 2011). As a result, Falbygden and in particular the Frälsegården site, are among the isotopically best-known regions in Europe. Some of the results will be discussed here.

Hinders (2011) analysed 46 human and 11 animal samples from the Frälsegården tomb. Several of these determinations were made on different elements from the same individual, in order to try to track changes during their lifetime. In addition to the isotope values determined specifically for diet studies, there are also $\delta^{13}\text{C}$ values made in connection with ^{14}C -datings (Sjögren 2003).

The $\delta^{13}\text{C}$ values from Frälsegården as well as from other megalithic tombs in the area are quite consistent and homogenous. The values centre on c. -21‰ with rather low standard deviations (Fig. 4, Table 1; see also Lidén 1995 and Hinders 2011). Such values are expected in an inland population deriving most of their protein from terrestrial sources. The low variability argues against any significant differences between categories of peoples, such as age or sex groups, although this has not been studied in detail. Some differences may be noted between different sites, however (Sjögren 2003).

As regards $\delta^{15}\text{N}$, the values centre around 10.5‰ , also with

relatively low standard deviations. This is to be regarded as a quite high value, and similar levels have also been reported from other passage graves in the area (Lidén 1995). Elevated $\delta^{15}\text{N}$ values have also been noted in other European Neolithic contexts. Various explanations have been suggested, such as consumption of aquatic food or of juvenile herbivores (Hedges & Van Klinken 2000; Fischer et al. 2007).

Using what has been called the ‘standard model’ for interpreting $\delta^{15}\text{N}$ values (Hedges & Reynard 2007), it could be suggested that Neolithic people in Falbygden derived most of their protein from high trophic levels, in other words from animals (herbivores), rather than plants. This is also the conclusion that has been drawn by several authors studying Neolithic diet elsewhere in Scandinavia (Lidén 1995; Eriksson 2003; Hinders 2011; Fornander 2011).

This model assumes a stepwise enrichment of c. 3‰ in $\delta^{15}\text{N}$ values for every trophic level, so that grasses and vegetables would have levels at c. 3‰ , herbivores at c. 6‰ and carnivores at c. 9‰ . Marine and freshwater systems have longer food chains and some species could attain even higher levels, reflecting the influence of marine and freshwater fish.

Unfortunately, there are a number of problems with this simple model, as is also the case for the interpretation of $\delta^{13}\text{C}$ values in collagen. One basic issue is that proteins, such as collagen, are preferentially coming from proteins already in the diet, rather than being synthesized within the body, and therefore do not reflect the whole diet. Isotope values in collagen are therefore biased towards high protein sources such as meat, while plant sources are seriously underrepresented (Ambrose & Norr 1993; Schwarcz 2000; Jim et al. 2004). Also, there is no support for assuming a linear mixing model of the diet; only in situations of low protein

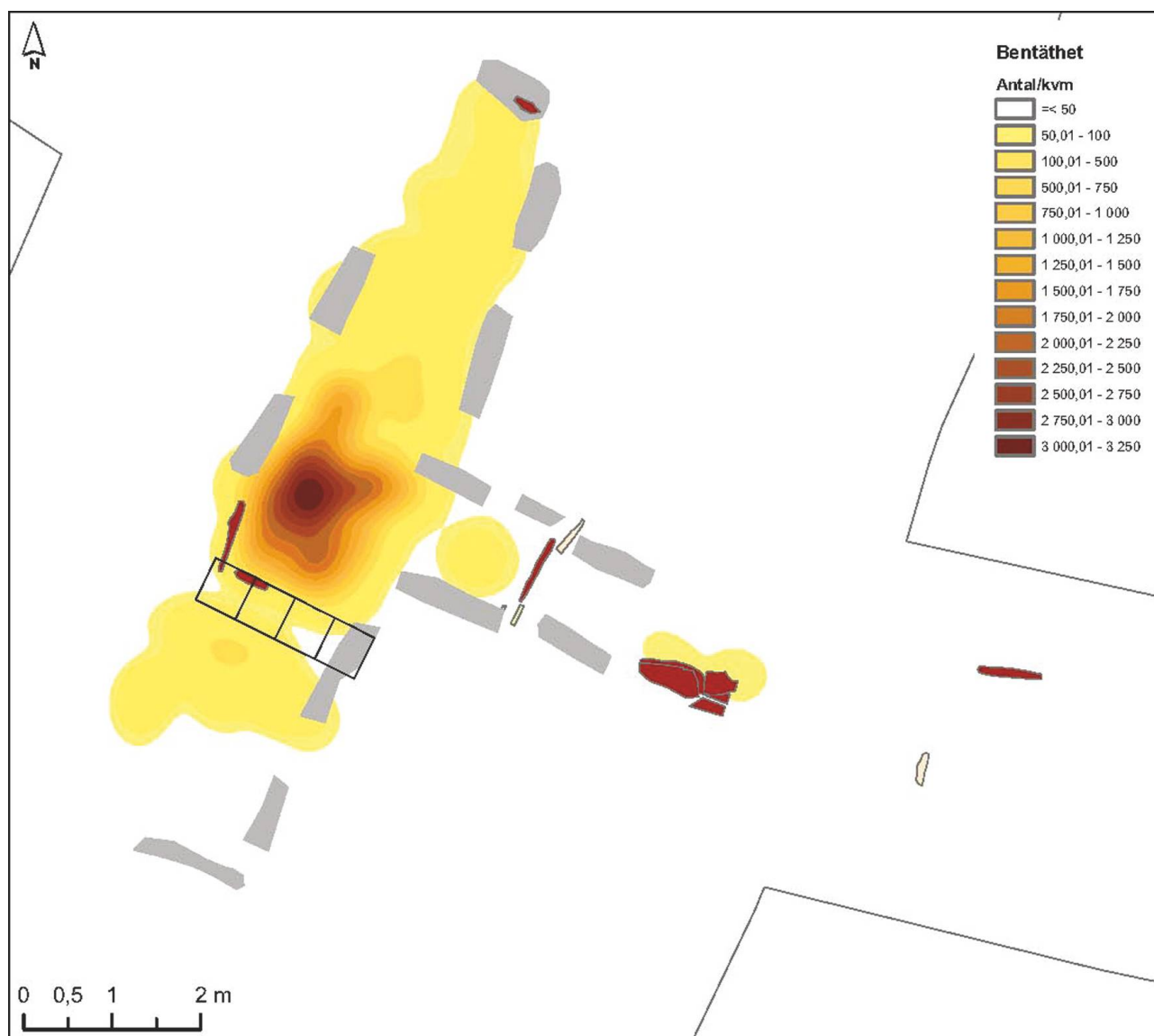


Fig. 3 Bone density in the Frälsegården passage grave.

access would substantial amounts of non-essential proteins be synthesized within the body from other components such as fats (Schwarcz 2000; Jim et al. 2004).

This problem affects both $\delta^{13}\text{C}$ and $\delta^{15}\text{N}$ measurements made on collagen. A complementary method is needed to assess the composition of the total diet. Based on controlled feeding experiments, several authors have suggested analysing $\delta^{13}\text{C}$ in the apatite in enamel or bone as a measure of total diet (Ambrose & Norr 1993; Jim et al. 2004) and also as a way of estimating the importance of meat vs. plant food. Another suggestion has been to analyse $\delta^{13}\text{C}$ in cholesterol (Stott et al. 1999; Jim et al. 2004), but none of these methods has been tried on Scandinavian Neolithic material as yet. Some apatite analyses have been made on Viking Age and Medieval humans from Gotland and Denmark, however (Kosiba et al. 2007; Yoder 2010, 2012).

As regards $\delta^{15}\text{N}$, it has been pointed out that there are a number of unsolved problems with the 'standard model' (Hedges & Reynard 2007). First, the isotope values in plants consumed by humans

are assumed to be the same as those consumed by herbivores. This is normally just an assumption as no values from prehistoric plants such as cereals are measured, and this introduces a risk of circular argument.

The possibility that humans and herbivores were not in fact eating isotopically similar kinds of plant is certainly the case in many instances. For example, seeds (e.g. cereals) may be enriched in relation to the whole plant. That $\delta^{15}\text{N}$ values in cereals can also be raised significantly as a result of cultivation practices such as manuring, has been shown experimentally (Fraser et al. 2011). Recently, a series of $\delta^{15}\text{N}$ determinations of cereal grains from the Iron Age hillfort at Danebury in England exhibited values at c. 6 ‰, i.e. 3 ‰ above expectations and very similar to values in cattle (Lightfoot & Stevens 2012). Obviously, there are serious problems trying to discuss the trophic level of humans in such a case.

The second problem is that the trophic level enrichment in humans is insufficiently understood (Hedges & Reynard 2007), and we cannot be sure that human $\delta^{15}\text{N}$ enrichment is the same as

Table 1 Summary statistics of $\delta^{13}\text{C}$ and $\delta^{15}\text{N}$ determinations from Frälsegården. N=number of samples. Data from Hinders 2011 and Ahlström & Sjögren forthcoming.

	Bone element	N	Mean	Standard deviation	Laboratory
$\delta^{13}\text{C}$	Femur	11	-20.8	0.2096	Stockholm
	Femur	17	-21.24	0.2257	Belfast+Århus
	Mandible	14	-20.9	0.2006	Stockholm
	Teeth	21	-20.9	0.166	Stockholm
$\delta^{15}\text{N}$	Femur	11	10.4	0.48	Stockholm
	Femur	17	9.98	0.683	Belfast+Århus
	Mandible	14	10.7	0.281	Stockholm
	Teeth	21	10.4	0.437	Stockholm

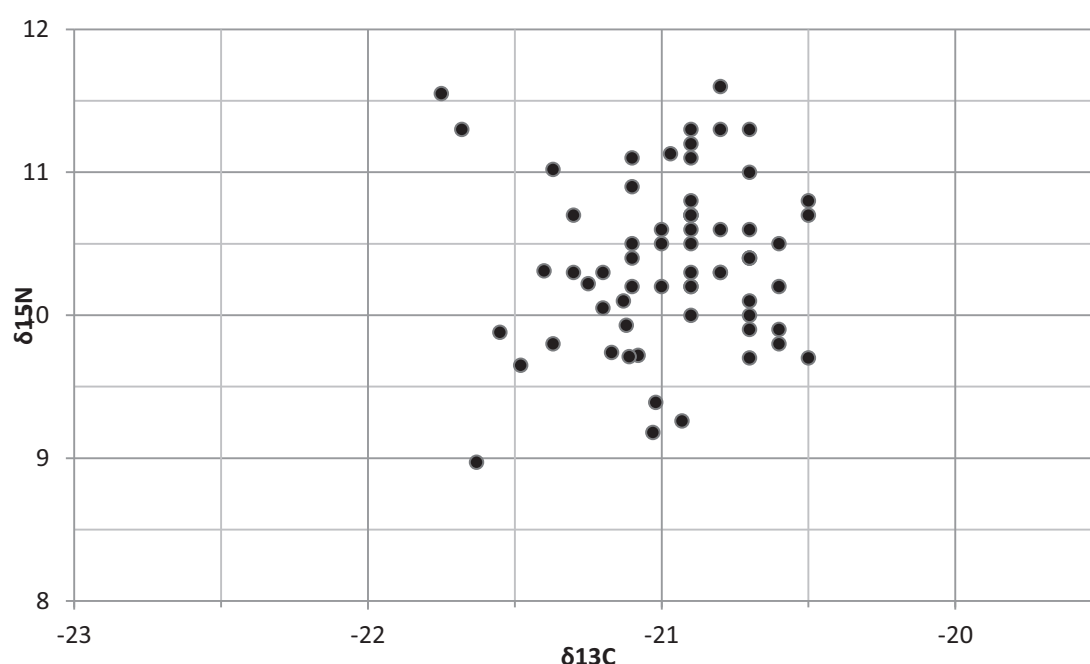


Fig. 4 Plot of $\delta^{13}\text{C}$ and $\delta^{15}\text{N}$ from Frälsegården. Data from Hinders 2011 and Ahlström & Sjögren forthcoming. All values (N=66).

in herbivores. Initially, a value of 3 ‰ was proposed, but more recently values up to 5 ‰ have been suggested for enrichment in humans (Hedges & Reynard 2007).

Finally, the problem of a contribution from freshwater fish is difficult to resolve, mostly because of a lack of sufficient reference data. Fresh water systems are complex and fish may vary greatly in isotopic composition, between species and within one and the same lake. However, Hedges and Reynard (2007) suggest the influence of freshwater fish to be moderate in most cases. In the case of Falbygden, the archaeological data available at present rather indicate a very limited input from freshwater fish.

A complicating issue is also that slaughter patterns where younger animals were butchered when reaching maturity would lead to enriched $\delta^{15}\text{N}$ levels in the meat consumed by humans, due to the lactation effect. Such animals would effectively have been feeding from their mothers and thereby moved up one trophic level.

As shown by Hedges and Reynard, only slight modifications of the standard model could lead to substantial changes in the

interpretation of diet. For a case such as Frälsegården with a mean $\delta^{15}\text{N}$ value of 10 ‰, we would get estimates of the fraction of animal vs. vegetable protein varying from 40 to 75 % by only small modifications of the standard model (Hedges & Reynard 2007: fig 1). This certainly fosters caution in the interpretation of $\delta^{15}\text{N}$ values, until supplementary data are at hand.

Whole diet and carbonate $\delta^{13}\text{C}$

One approach to the question of the relative importance of plants versus meat in the whole diet is looking at carbonate (apatite) in bone or teeth. In contrast to collagen values, apatite reflects the whole diet. This effect has been demonstrated by feeding experiments on mice, rats, pigs and other animals (Ambrose & Norr 1993; Tieszen & Fagre 1993; Passey et al. 2005; Warinner & Tuross 2009).

Ambrose and Norr (1993), based on feeding experiments with rats, found that when the protein and bulk diet have the same $\delta^{13}\text{C}$ values, collagen is enriched by 5.0 ‰, and apatite is enriched by 9.4 ‰ relative to the total diet, and the apatite-collagen spacing is

4.4 ‰. Harrison and Katzenberg (2003), on the other hand, found a $\delta^{13}\text{C}$ apatite-diet value of +12.0 ‰ and a $\delta^{13}\text{C}$ collagen-diet of value of +5.1 ‰ with a $\delta^{13}\text{C}$ Cap-co offset of 6.9 more accurate for human samples. Tykot et al. (2009) also argues for an enrichment of about 12‰ (Tykot et al. 2009) based on the evaluation of other human apatite and enamel values. For ruminants considerably higher values have been reported, up to c. 14 ‰ for cattle (Passey et al. 2005). The variation in diet-apatite spacing seems partly to be related to variation in exhalation of methane which is larger in ruminant herbivores than in omnivores and carnivores. However, part of the explanation also lies in variation in food composition, e.g. variation in ^{13}C -depleted fats in the diet (Hedges & van Klinken 2000). The question of apatite enrichment is not resolved.

In a number of studies it has been suggested that it should be fruitful to consider both collagen and bone apatite values, in particular the collagen-apatite spacing. Lee-Thorp et al. (1989) interpreted patterning in the collagen-bone apatite spacing as relating to trophic level differences and reported collagen-bone apatite spacing values of $6.8 \text{ ‰} \pm 1.4 \text{ ‰}$ for herbivores and $4.3 \text{ ‰} \pm 1.0 \text{ ‰}$ for carnivores, with omnivores falling in between at $5.2 \text{ ‰} \pm 0.8 \text{ ‰}$. Therefore, it has been suggested that carnivores generally have smaller collagen-apatite spacing than herbivores (Lee-Thorp et al. 1989; Schwarcz 2000; Hedges & van Klinken 2000).

For northern Europe, few data on collagen-carbonate spacing in animals are available. Yoder (2012) reported a small sample of data from Medieval Danish animals. These data show spacings at c. 9.4-9.5 ‰ for elk, deer and goat, while a pig and a cow are lower, at 7.8-7.9 ‰.

This trophic level effect has been disputed on the basis of feeding experiments (Kellner & Schoeninger 2007). It should be noted that feeding experiments so far have mostly been made on small animals and not on carnivores, while the values reported by Lee-Thorp et al. (1989) come from a larger set of free-ranging animals.

The mechanisms leading to such a difference in spacing are somewhat disputed. One suggestion is that the difference is due to higher intake of ^{13}C -depleted herbivore fats in carnivores than in herbivores, which generally have low protein and low fat diets (Krueger & Sullivan 1984). Another suggestion is differences in physiology, leading to higher methane exhalation in ruminant herbivores. Schwarcz (2000) proposed a more complex model, involving inhibited synthesis of protein from fats in situations of adequate protein supply, i.e., in carnivores. This would affect the collagen levels rather than the carbonate levels and, if this proposition is correct, the difference between diet and collagen $\delta^{13}\text{C}$ values would be more variable, and the relation between diet and collagen values more complex than is often assumed.

The use of one-dimensional variables such as these has also been criticized, and several authors have proposed the use of regression models or multivariate methods involving several isotopes measured on collagen as well as bone or enamel apatite (Kellner & Schoeninger 2007; Froehle et al. 2010). For instance, it has been shown that $\delta^{13}\text{C}$ collagen and $\delta^{13}\text{C}$ apatite values fall on two distinct regression lines, representing C3 plant based and C4 plant/marine based food chains respectively (Fig. 5). This has interesting implications for diet studies in coastal areas, but is perhaps less relevant for the question of animal vs. plant food in inland areas of Europe.

In inland environments in Northern Europe, the $\delta^{13}\text{C}$ differences between different food components may be less pronounced than in a coastal environment or an area where C4 plants are present. C3 plants usually have bulk $\delta^{13}\text{C}$ values around -26 ‰, and the values in proteins and non-proteins are suggested not to differ very much from each other (Schwarcz 2000; Hedges & van Klinken 2000). This is not the case in animals, where isotope signatures can vary considerably between various tissues. In herbivores feeding on C3 plants, fats are depleted in ^{13}C while proteins are enriched. Hedges & van Klinken (2000) suggest levels at -21 ‰ for herbivore proteins and -28 ‰ for the non-protein portion.

While most of the studies referred to here have analysed apatite in bone, in many prehistoric cases it would be preferable to analyse enamel because of better preservation and smaller contamination problems. Available studies suggest good correlation between bone apatite and enamel $\delta^{13}\text{C}$, although the possibility of a minor offset has been suggested. For instance, enamel was enriched by 2.3 ‰ over bone apatite in experimental pigs (Warinner & Tuross 2009), although a much smaller offset was found in a sample of prehistoric humans (Loftus & Sealy 2012). One cause of difference between bone and enamel values may be change of diet rather than physiology, since enamel is formed during the early years of life while bone is remodelled continuously during life.

Analytical methods

Teeth are mechanically pre-cleaned by hand and subsequently repeatedly washed ultrasonically in ultrapure (MilliQ™) water until the water remains visually clear. After drying, we abrade part of the surface of the tooth to remove contamination using a dental drill fitted with a diamond burr. Small pieces of enamel are removed by means of a small diamond blade saw and/or with chromium steel pliers. Extreme care is taken to separate dentin material from enamel. We use about two milligrams of fine enamel powder for carbon isotopes.

The prepared finely powdered enamel (sample weight ~700 µg) is reacted with 100% phosphoric acid in the presence of silver foil at 70°C in a Kiel III automated carbonate reaction device coupled to the MAT 252 mass spectrometer. Carbon and oxygen isotope ratios are simultaneously determined on the CO_2 generated by this reaction. The isotope ratio measurement is calibrated based on repeated measurements of NBS-19 and NBS-18 and precision is $\pm 0.1 \text{ ‰}$ for $\delta^{13}\text{C}$ and $\pm 0.06 \text{ ‰}$ for $\delta^{18}\text{O}$ (1s). The carbonate – CO_2 fractionation for the acid extraction is assumed to be identical to that of calcite. Analytical error on this instrument is $\pm 0.05 \text{ ‰}$ for $\delta^{13}\text{C}$ and $\pm 1.0 \text{ ‰}$ for $\delta^{18}\text{O}$. The analysis was performed by David Dettman at the Environmental Isotope Laboratory, Department of Geosciences, University of Arizona.

Frälsegården results

Enamel carbonate $\delta^{13}\text{C}$ has been measured in 27 teeth from Frälsegården (Table 2). The sampled teeth are mostly first molars. In a few cases, second molars or milk teeth have been used. Crowns in permanent first molars are completed about the age of 3 years and in second molars about 6 years of age (Reid & Dean 2006).

Collagen in the roots of teeth has been measured in some studies. Root formation is more variable than crown formation. First molar roots are completed at about 9-12 years, second molars sometime after 12 years of age (Hillson 1996). Collagen ^{13}C and ^{15}N have

Table 2 Carbonate $\delta^{13}\text{C}$ results from Frälsegården. FindID=Excavation unit /total station id, BoneID=bone element id, TID=tooth id. ^{13}C coll and ^{15}N col data from Hinders (2011) have been included in cases where values have been measured on the same tooth.

Serial no	FindID	BoneID	TID	Element	Sex	Age	$\delta^{15}\text{N}$ coll	$\delta^{13}\text{C}$ coll	$\delta^{13}\text{C}$ enamel
98	20025	20025	810	LLM1	Female	17-25	10.7	-21	-14.05
99	106219	370	193	LLM1	Female	20			-14.24
100	110019	1001	107	LRM2	Male	17-25			-14.07
101	111126	1221	1	LLM1	Male	Adult			-14.29
102	118114	2731	188	LLM1	Male	35-45			-15.06
103	119029	3184	67	LLM1	Male	17-25	9.8	-20.6	-15.2
104	119811	3161	175	LLM1	Male	35-45			-14.74
105	120033	3644	319	LLM1		17-25			-13.93
106	120180	3671	88	LLM1	Male	17-25	10.8	-20.9	-13.82
107	121181	4169	147	LRM1	Female?	18-20	10.4	-20.7	-15.52
108	121240	3860	497	dpm4 sin		child			-14.25
109	122448	4247	212	dpm4 dxt		6 years			-14.66
110	123043	3407	122	LRM2	Male	35-45	10.2	-21	-14.09
111	124293	4720	108	LLM1	Male	17-25			-14.16
112	126156	4880	347	LLM1		15 years			-14.63
113	126212	4832	113	dpm4 dxt		child			-13.73
114	129378	3219	141	LLM1	Female	25-35			-14.16
115	132390	5874	200	LLM1	Female	17-25			-15.28
116	133342	6222	178	LRM1	Female?	17-25	10.2	-21.1	-15.03
117	140706	8100	164	dpm4 sin		8 years			-13.45
118	140706	8100	165	LLM1		8 years			-14.69
119	F10	9361	666	LRM2	Female?	17-25			-13.91
120	F98		674	LLM1	Female	17-25			-15.52
156	120033	3644	318	LLPM4		17-25			-14.52
121	F106		694	dpm4 dxt		child			-14.66
122	F118	9064	676	dpm4 dxt		4 years			-13.43
123	F128		784	dpm4 sin		child			-13.86

also been measured on other skeletal elements from Frälsegården, summarized in Table 1.

Thus, enamel values represent childhood diets, while most of the collagen values represent diet in adults. However, there are no significant differences in $\delta^{13}\text{C}$ or $\delta^{15}\text{N}$ in collagen among the different kinds of bone and teeth (table 1), suggesting that diet changes during life have not been very dramatic, or at least have not involved shifts between the broad food categories that are traceable by isotopic methods.

The mean carbonate $\delta^{13}\text{C}$ is -14.4 ‰. The mean collagen $\delta^{13}\text{C}$ is -20.9 ‰ (table 1), giving a mean collagen-carbonate spacing of 6.5 ‰. Using a diet-carbonate spacing value of 9.4 ‰ as a guide, this would indicate a diet with a mean $\delta^{13}\text{C}$ of -23.8 ± 0.58 ‰. If we instead use the regression equation according to Kellner & Schoeninger (2007) we get a slightly lower estimate of the bulk diet $\delta^{13}\text{C}$, -24.18 ± 0.6 ‰. An assumed apatite-enamel enrichment of about 2 ‰, as suggested by Warinner & Tuross (2009), would lead to estimates at c. -26 ‰ for the whole diet, in other words very close to the mean values for C3 plants.

In six cases, collagen and carbonate values have been determined from the same tooth. Calculating the mean spacing for these individuals we get a value of 6.2 ‰. Since both collagen and enamel values in these cases reflect childhood conditions, and this spacing is close to that calculated from the overall means, we can assume that diet changes during life do not affect the results more than marginally.

Plotting the ^{13}C collagen vs the ^{13}C enamel values for these individuals (Fig. 5), we can see that they follow closely the regression line for C3 based protein as proposed by Kellner & Schoeninger (2007: fig. 5). This is to be expected in an inland environment.

Comparison with the results of Lee-Thorpe et al. (1989) indicates that a collagen-carbonate spacing of 6.5 ‰ is in fact a rather high value. In this respect, the Frälsegården individuals are more similar to herbivores than to the carnivores reported by Lee-Thorpe et al., suggesting a rather high proportion of plant foods in the total diet.

Interestingly, this conclusion is almost diametrically opposed to the common interpretation of $\delta^{15}\text{N}$ values discussed above. One

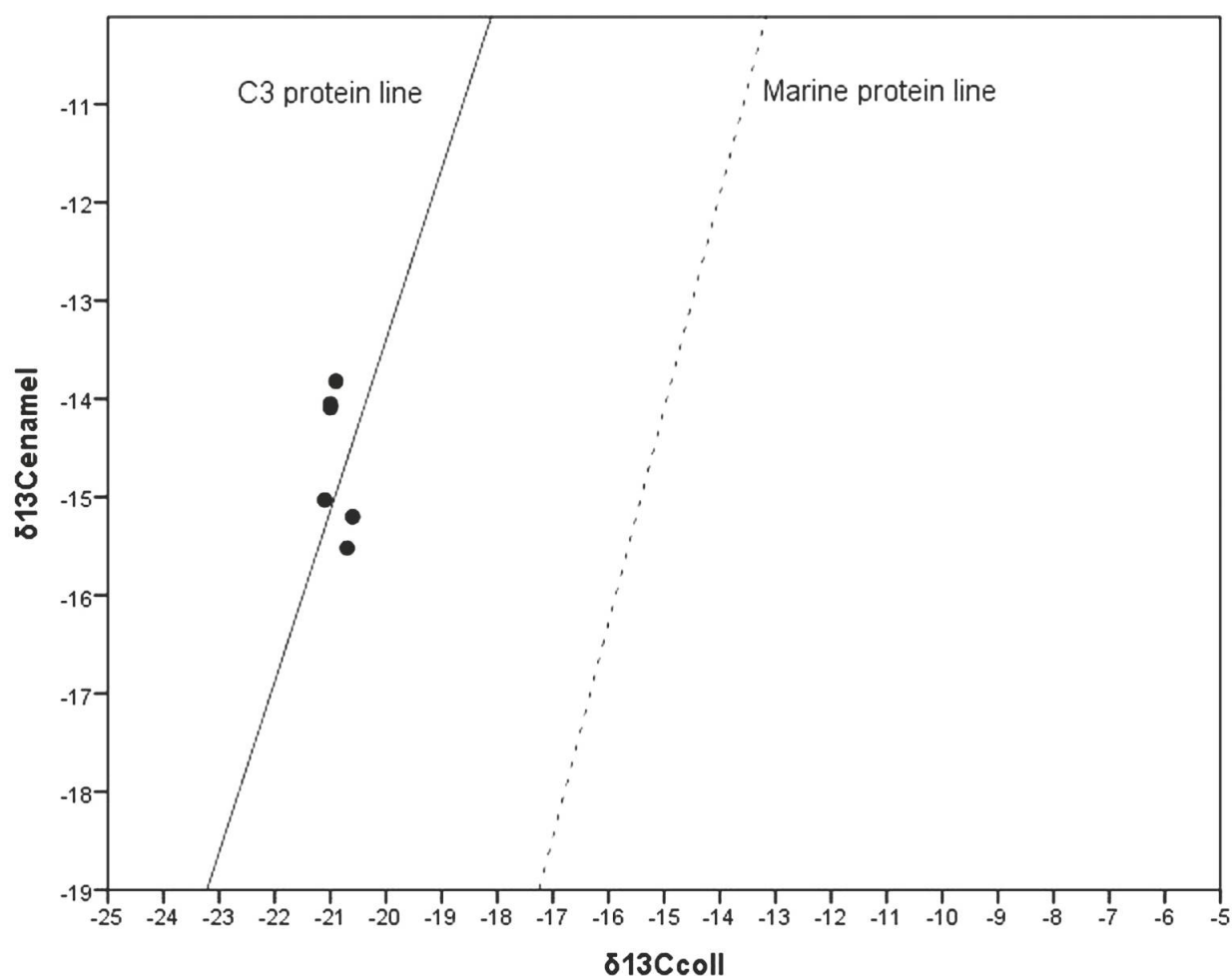


Fig. 5 $\delta^{13}\text{C}$ collagen vs. enamel in six individuals from Frälsegården. C3 and marine/C4 protein regression lines plotted according to Kellner & Schoeninger 2007.

way of looking at this discrepancy is to suggest a substantial plant food component in the whole diet, while protein is mainly derived from animals. This would be expected in light of the feeding studies referred above, in a situation with a sufficient supply of protein in the diet.

It is also instructive to compare the Frälsegården results with the data from Medieval Danes (Yoder 2012). These humans were buried in various contexts in and around Øm monastery in Jutland, about 30 km from the coast but near two freshwater lakes. From their burial context, they may be divided into elite burials, monks, and commoners/peasants. The monks at this site were Cistercians and were subject to restrictions regarding animal meat. From historical evidence, it is supposed that the elite would have better access to foods such as meat and marine food, while the peasants would have been confined largely to bread, plant foods and inland lake fish.

From Fig. 6, it is clear that the measured $\delta^{13}\text{C}$ values in these individuals meet these predictions well. There are significant differences in $\delta^{13}\text{C}$ apatite as well as $\delta^{13}\text{C}$ collagen and $\delta^{15}\text{N}$ collagen between these social groups. The elite group is higher in $\delta^{13}\text{C}$ collagen and $\delta^{15}\text{N}$ but lower in $\delta^{13}\text{C}$ apatite. Further, the mean collagen-apatite spacing varies from 4.01 in the elite group to 5.55 in the monks and 5.61 in the peasant group. This would suggest a significant difference in diet, involving a higher intake of

meat and marine food for those belonging to the elite. The peasant group displays a higher degree of variation, but a large portion of them differ from the elite by having higher $\delta^{13}\text{C}$ apatite, lower $\delta^{15}\text{N}$ collagen and lower collagen-apatite spacing.

The Frälsegården humans fall with the peasant group, in fact among the extreme values of this group (Fig. 6). This would suggest a broad similarity in their diets, most probably involving a substantial intake of vegetable foods, not only cereals but also other kinds of vegetables as well.

Conclusion

We present here the first series of $\delta^{13}\text{C}$ measurements made on enamel carbonate from Neolithic humans in Scandinavia. While earlier analyses on collagen have emphasized the importance of animal protein in the Neolithic diet, the present results suggest the substantial importance of plant foods in the total diet. In line with much of recent discussion on isotopic diet studies, we believe that collagen analyses on their own provide only a partial view of prehistoric food patterns and need to be complemented by other methods. Enamel carbonate measurements seem to be a promising method to explore in future studies and should probably be included as a standard procedure along with the more well-established collagen analyses.

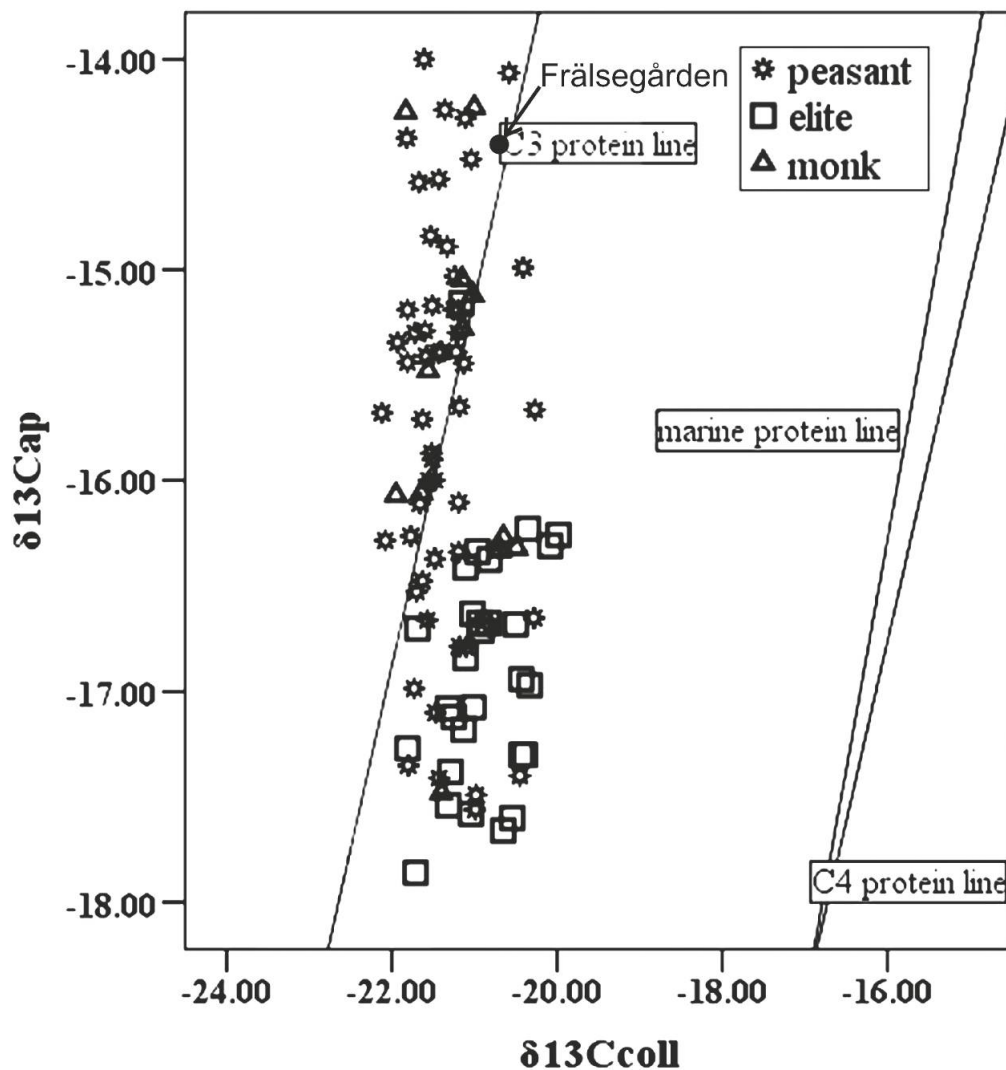


Fig. 6 Mean $\delta^{13}\text{C}$ collagen and apatite values at Frälsesgården (black dot) compared to a Medieval Danish sample (Yoder 2012: fig 4 with additions).

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THE STEPPE AND THE CAUCASUS DURING THE BRONZE AGE: MUTUAL RELATIONSHIPS AND MUTUAL ENRICHMENTS

Natalia Shishlina

Abstract: Interpretation of the data which is currently available for the populations of the Steppe and the adjacent North Caucasus areas during the Bronze Age has enabled the analysis and reconstruction that follows. From this time onwards the way of life of the population that manufactured goods, weapons, tools and organized other aspects of its economic and also cultural products is reflected in pastoral movements from the south, i.e. the North Caucasus, to the north, i.e. the Steppe, and vice versa. The reasons for such movements might have included climate change, seasonal economic cycles, the necessity to control the exploited areas and the development of cross-cultural links, including marriages. During such movements different population groups developed their relationships in a mutually enriching fashion. With new data we are able to produce not only generalized reconstructions of the prehistoric pastoral societies inhabiting these two regions, but also gain insights into individual lives, so that personal stories begin to emerge.

Keywords: Eurasian Steppes, Caucasus, Bronze Age, pastoralism, population movements

Introduction

The Steppes and the Caucasus have been attracting scholarly attention for many years because the steppe border with the Caucasus is an area where many cultural traditions of the Bronze Age formed and developed. Mixed cultural groups are behind such traditions. The economic cycle and form of production developed by the ancient populations of these areas were based on the exploitation of raw materials, food resources and the organization of exchange systems, as well as short and long-distance movements across the regions being exploited. New data combined with the results of new methodologies and theoretical approaches enables us to achieve a deeper understanding not only about the types of cultures or graves, but also about the lifestyle and lifeways of the people who occupied the Steppes and the Caucasus during the Bronze Age (Fig.1).

The aim of this paper is to show the development of mutual relationships and mutual enrichments of the Steppe and the Caucasus populations throughout the time period from 3800 calBC to 2200 calBC, with a particular focus on population mobility between the two adjacent areas. The cultures, which are taken as examples, are presented in Table 1. The Steppe Majkop population penetrated into the steppe at the end of the first half of the fourth millennium BC, reflecting a specific historical situation in the North Caucasus and the neighbouring steppe areas during this time. Only a few Majkop kurgans (burial mounds) have been found on the steppe. The Yamnaya culture population settled the steppe and this led to the next period, one characterized by exploitation of the steppe. In the subsequent period the cultural situation changed and we see a mosaic of cultures. The southern boundaries of the steppe were opened up, and river routes were developed which may be linked with the spread of new Steppe and North Caucasus populations. During a relatively short period several cultural groups, i.e. the Late Yamnaya, Early Catacomb and Steppe North Caucasus, must have coexisted. At the end of this period the East Manych Catacomb population appeared. Throughout several millennia groups of various traditions swept across the plains of the Steppe and different ecological zones of the North Caucasus. These two regions were not isolated from each other and within these exploited areas different cultural groups chose their own ways to develop.

When identifying the mobility of people one has to define the relevant factors and their impact for each population (Wendrich & Barnard 2008: pl. 1.3).

Population movements: methods of identification

What can the archaeology of the Steppe and the Caucasus during the Bronze Age tell us about the mobility of people? Titov (1981:92) identified three theoretical criteria that help identify the migrations of Bronze Age archaeological cultures. For the spatial criterion it is held that the homeland of the culture and its new location must be linked through marginal zones or the appearance of sites between the old and the new areas. The chronological criterion is based on the assumption that the culture in the primary region existed earlier than that in the newly settled one. Finally, the 'pattern' criterion relates to the fact that the culture that migrated must be a direct copy of the culture which existed in its area of origin. For example, the discovery of wheeled transport in both regions (Trifonov 2004; Gey 2004; Sherratt 1997 and 2004) gave archaeologists a tool for constructing models of population mobility. Titov cautioned, however, that it can be very difficult to identify these three criteria from the archaeological sources (Titov 1981: 93). Nevertheless, with the help of new methodological and scientific approaches we are able to construct working models and deduce much useful information.

Paleoecology: Paleoeological reconstruction of the Steppe and the Caucasus helps us determine the economic potential of different environmental zones and how ecological changes had an

Table 1 The analysed cultures and their respective chronologies.

Culture	Time Interval
Majkop	3600-3000 calBC
Yamnaya	3000-2500 calBC
Early Catacomb	2700-2400 calBC
Steppe North Caucasus	2500-2300 calBC
East Manych Catacomb	2500-2200 calBC

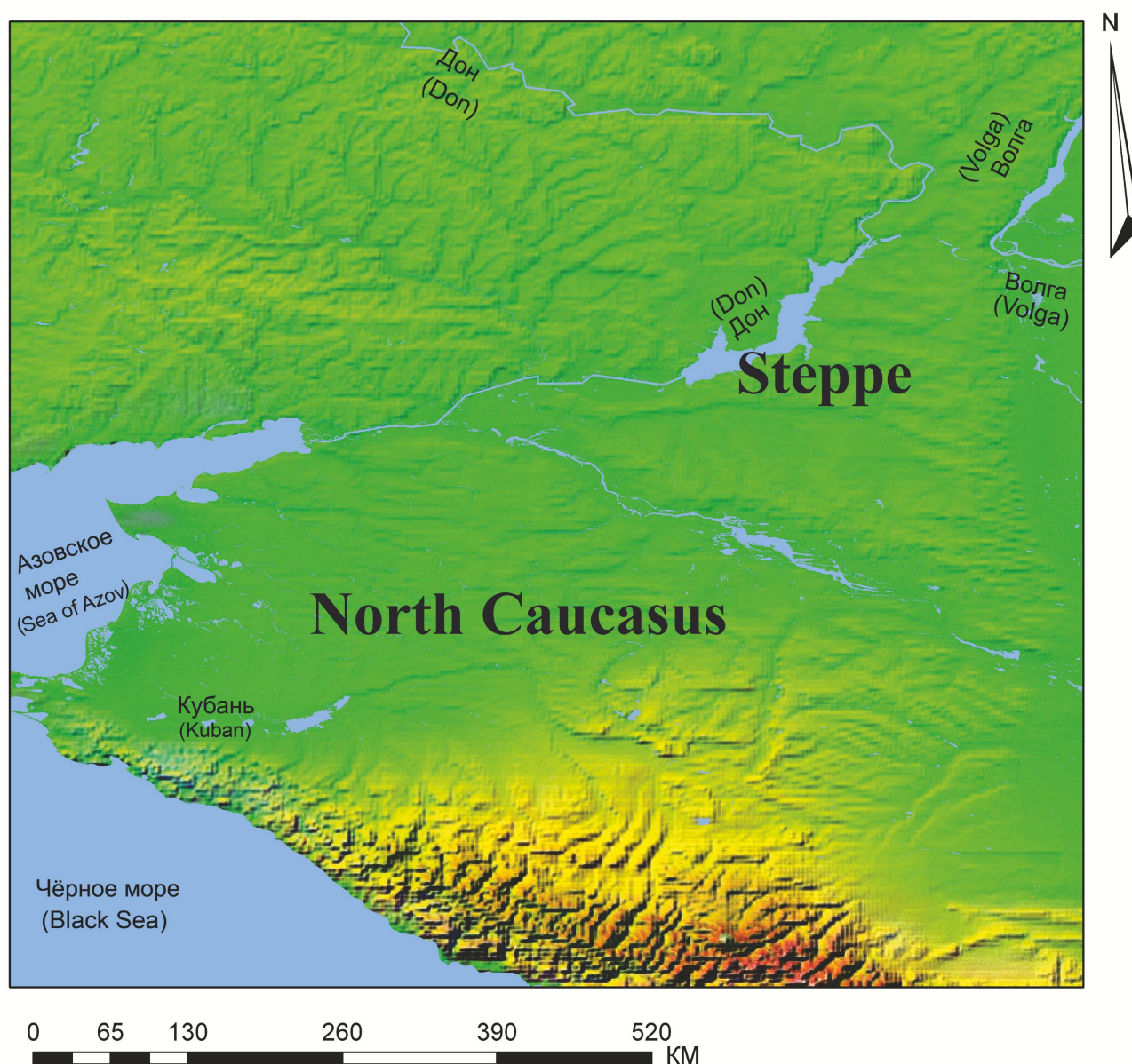


Fig. 1 The Steppe and the Caucasus: area of research.

impact on the development of associated human cultural groups. Landscape, climate and the hydrological network are the main components of this approach. Various environmental niches on the Steppes differed from those in the Caucasus. Changes in their environmental conditions deeply influenced the appearance, development and disappearance of prehistoric archaeological cultures and even stimulated historical events, including the movements and migrations of people.

Seasonality: The most important aspect to take into account in seasonality studies with regard to population movement is that the productivity of different grasslands changed according to season, frost and drought. Pastures with steppe vegetation are more productive in spring and have less vegetation in early winter (Shishlina 2008). The system of seasonal use of grassland has been one of the key principles of exploitation of different ecological zones since the origin and subsequent evolution of the pastoral mode of life. Seasonality data can therefore be used for identifying population mobility. Each grave is a closed archaeological context containing important information on the

season when the grave and the mound were constructed. The methodology used for determining the season of archaeological sites has been discussed in many publications (for example, see *Environmental Archaeology* 1998; Klevezal & Shishlina 2001; Klevezal et al. 2006).

Ethnobotanical data: This type of data indicates an ecological situation, different types of vegetation pastures in the Steppe and the Caucasus as well as seasonality at archaeological sites. It can also provide information about the food acquisition system of ancient populations who were exploiting different food resources. This might provide additional information about the location and migration of different groups of people.

'Isotope archive': Dietary information can be obtained from $d^{13}C$ and $d^{15}N$ values of human and bone collagen (Lanting & van der Plicht 1998; Richards et al. 2003). Different values of $d^{13}C$ and $d^{15}N$ point to different dietary systems which have been reconstructed for various population groups (Thompson et al. 2005; Keenleyside et al. 2009). Therefore, the comparison

between groups or even individuals can be used for identifying the presence of immigrants who might have consumed a different diet from that of the average population in a given area (Strydomck et al. 2004). The strontium isotope ratio in human tooth enamel is another tool for the identification of human mobility and migration (Buzon et al. 2007). Individuals growing up in different regions can be differentiated by their $^{87}\text{Sr}/^{86}\text{Sr}$ because the strontium isotope ratios vary depending on the environment (Katzenberg & Harrison 1997; Bentley & Knipper 2005).

Hence, new approaches help us identify 'non-visible archeological data', the interpretation of which may be used for indicating mobility in prehistoric populations.

Population movements: motivation and level of mobility

There are many reasons why people began to move and which determined how often they moved. New data might clarify a specific role of the environment when we try to understand the motivation and the level of mobility of ancient populations. Some groups might have been searching for regions with a similar ecology in order to easily reestablish their mode of life in a new place, while the motivation behind other population movements was probably strongly linked to climatic deterioration (due to aridification) and the desire to solve economic problems (through colonization).

A colonization process: The sedentary Majkop population that lived in a narrow piedmont strip of the North Caucasus subsisted on dry farming and animal husbandry (cattle, sheep and goats) (Trifonov 2002). Small Majkop settlements with an occupation layer of up to 40 cm were located in river valleys. River pastures and steppe watershed grasslands were used for grazing animals, i.e. horses and pigs, near settlements. Most likely, high mountainous areas were not exploited (Trifonov 2002). Various sub-sectors of sedentary livestock-raising could develop in several landscape areas, such as pig- and sheep-raising, or a mixed type of pastoralism where cattle, sheep and goats were reared (Munchaev 1975). A dry and warm climate and mild winters with only a small amount of snow supported this type of economy. Though the Majkop population of the North Caucasus is considered to be sedentary, we may suppose that the steppe environment contributed to their efforts to colonize the still vacant steppe areas. Majkop groups appeared in the Steppe starting from the Early Majkop culture, i.e. 3600-3500 calBC.

Steppe Majkop kurgans (mounded-tombs) containing a small number of burials have been found on watersheds of the steppe area and are linked to large river systems. The North Caucasus settlers exploited the Caspian steppes under favorable climatic conditions, i.e. the predominance of mixed gramineous plant steppes and increased humidity. The economy of this population was based on sheep-raising during the warm season as well as the collection of wild steppe plants. Most likely, small family groups migrated in spring and summer in search of grasslands, penetrating deep into the north away from the main core, i.e. the North Caucasus piedmont.

It should be noted that grasslands located in river and lake valleys probably were not used in winter due to a potentially deep snow cover. Similar to the mixed grass pastures of the high watershed plateau as well as the foothills of the North Caucasus pastures, they cannot have been accessible until warm weather arrived. Moving from one steppe place to another would have enabled Majkop herders to keep intact their winter grasslands located in

the North Caucasus river valleys and along the mountainous slopes of the North Caucasus.

Therefore, the reason for mobility in this case seems an attempt to enlarge the occupied economic area and the intention to incorporate new food resources. It seems feasible to sustain that Majkop populations tried to exploit the best specific steppe environmental niches and probably colonized them (Shishlina 2008). It is clear that the Majkop population developed a multi-component economy that included, among other things, both trips and expeditions to find sources of goods and pastoralism (Shishlina 2008).

Most likely, such moves deep into the steppe were seasonal and were linked to the development of sheep rearing in some North Caucasus areas, and were based on the use not only of valley pastures, but also northern steppe grasslands. In summer high temperatures predominated in the exploited valley and North Caucasus piedmont areas with a shortage of water sources while winter conditions did not allow the snow cover to become too high. In this situation the intention to use summer grasslands located beyond potential winter pastures seems quite logical.

In addition to that, livestock-raising near the settlements, flooding, and climate fluctuations in the North Caucasus could have led to the destruction of agricultural lands and dictated a need to search for new lands. There is no data on agriculture in northern areas (Lebedeva 2005). This system, which envisages moves as long as a hundred kilometres during the year, is definitely not feasible without wheeled transport, the use of which by the Majkop population has been documented through archaeological material (Trifonov 2004).

The issue as to whether it was an attempt to colonize new lands or just seasonal exploitation of vacant 'virgin' lands located along riverine and lacustrine valleys by small family groups is still subject to debate (Shishlina 2008).

Aridification: Research into regional paleoclimates has revealed frequent and sometimes very sharp climate changes, such as an alternation of relatively humid and dry periods that might have lasted for several centuries (Alexandrovsky 1997; Demkin et al. 2002). Even slight variations in the ground-water level and annual temperature and precipitation may have caused changes in the main landscape components: vegetation, soil and fauna (Borisov et al. 2006). Changes in climate in both the Steppe and the Caucasus regions might have generated a need to search for new resources.

The climatic optimum around 3000 cal BC (Demkin et al. 2002) was conducive to year-round, short-distance migrations of the Yamnaya people.

Comparative analysis of chemical and morphological properties of paleosoles buried under steppe kurgans and contemporaneous soils as well as other ecological data (Borisov et al. 2006) indicate that climate aridification was very strong and lasted for several centuries. The heaviest droughts occurred around 2300-2200 ca BC, resulting in disastrous wind erosion, an increase in the concentration of water-soluble components and deflation of the upper horizon of the soils of the watershed areas (Borisov et al. 2006). Global aridification, that affected many Eurasian regions, led to severe climatic cataclysms, changes in landscape characteristics, notably in the hydrological network, affecting thereby most aspects of human activities. A drier climate resulted

in many rivers and lakes becoming dry in summer (Ivanov & Vasiliev 1995; Ivanov & Demkin 1999).

The migration patterns had to reasonably adapt to these rapidly changing natural conditions, including the degradation of previously used grasslands (through, for example, short distance moves). The impact of climatic deterioration created a reduction in vegetation biomass in some grassland ecosystems (Gol'eva 2001). A need to search for fodder and water resources must have led to a situation where previously vacant areas of the Steppe were included into the zones that were regularly exploited. But changes in the climatic pattern led also to an increase in winter grasslands in the region, since a reduction in the precipitation level reduced the depth of snow cover. With the depth of the snow cover not exceeding 10-12 cm, both sheep and goats could break it down in search of food. Severe climatic cataclysms, a change in landscapes, degradation of grasslands, and shortages of portable water must have affected human life activities.

Under the influence of the abovementioned environmental changes the East Manych Catacomb population transformed its economic cycles and became the most mobile group among other pastoralists of the Bronze Age (Shishlina 2004a). This population quickly occupied previously vacant areas and began to organize long-distance movements with herds across the whole steppe area, whilst still actively using the North Caucasus region (Belinsky et al. 2000; Korenevsky et al. 2007). New data suggest two variants of migrations: 1) migrations of the entire family; 2) migrations of only adult males (and, possibly, adolescents). The appearance of typical steppe graves in the Caucasus (Nechitailo 1978) may confirm this proposal. Thus routes of their pastoral migrations could extend across hundreds of kilometres.

Both examples give us possible explanations for the motivation of movements and the level of mobility of small groups. It is very important to emphasize the important role of seasonal movements of the Steppe and the North Caucasus populations.

Population movements: seasonal pasturing and variations of mobility over time

At the beginning of the Bronze Age, Eurasian steppe pastoralism was an absolutely new economic phenomenon. It included regular seasonal migrations, an alternative use of different grasslands and water resources. The development of such an economy was a complex process, which led to the establishment of specific technological and social mechanisms articulating the pastoral mode of life (Shishlina 2008).

As has been mentioned earlier, when Early Majkop populations tried to penetrate deep into the steppe, leaving behind the North Caucasus piedmont area, such penetrations probably occurred during the warm season (Shishlina 2008: 296). This means that small groups of people were on the move for several months, which is quite possible given the long period of warm weather typical for the southern steppe areas. In summer people could move from place to place on foot. But the presence of a large number of varied tools in the burials (Shishlina 2008: fig. 16; 18; 21) implies that either wagon or traction animals were used to transport things needed in travel. Wagons could also be used as dwellings.

It was not until the appearance of the Yamnaya people, however, that this economic system became predominant. Yamnaya groups migrated along rivers in winter, then moved away from such



Fig. 2 Model of wagon. Clay. East Manych burial ground. Kalmykia steppes. East Manych Catacomb culture. 2400 calBC.

rivers for short distances in summer. It allowed them to bury their relatives in tribal burial grounds located in the area of winter migration (Shishlina 2008: 298-299). People moved within a small area not more than 10 – 20 km away from the river where their winter-bases lay, towards the nearest watersheds where they went from place to place in summer and autumn (Shishlina 2008: 298-299). The use of wheeled transport (see Fig. 2), draught animals, and bulls and horses as pack animals facilitated the logistics and made such moves possible. A wooden wagon wheel was found in a Yamnaya burial at Eastern Manych. The sides of wagons or cabin parts may have been placed in some graves (Shishlina 2008: fig. 54-55).

Small family groups of the North Caucasus population moved across the Caspian Steppes, with these moves taking place only in the warm time of the year (Shishlina 2008: 297). Possibly, some groups of seasonal herders were composed only of adult males and adolescents (Shishlina 2008: 282-283). The topography of North Caucasus burial grounds is indicative of compact settlement and helps us identify two main directions of movement: south-north movements (between the Terek and the Kuma lakes located in the western part of the Caspian Plain and the Sarpa Lakes) and east-west movements (the Kalaus – the Eastern Manych – the Western Manych – the Lower Don). These could be pastoral groups of sheep-rearers.

In a former study, we assumed that the burials of Catacomb culture herders had to occur in different seasons. We have collected seasonality data for more than 35 graves out of 190 Early Catacomb graves and for more than 50 graves out of 856 East Manych Catacomb graves (for the data see Shishlina 2004a and 2008).

For example, Early Catacomb graves at Mandjikiny-1 and Manjikiny-2 located on the Steppe were left behind by small family groups that migrated across the area they exploited throughout the year. This conclusion is strengthened by the seasonality of burials (Shishlina 2008). But in terms of number,

Table 2 Isotope ratios for three dietary groups of steppe populations.

Model	$\delta^{13}\text{C}$, ‰	$\delta^{15}\text{N}$, ‰
Model 1: Flesh/milk of herbivore animals, wild C_3 plants	from -21 to -19	from +9 to +11
Model 2: Flesh/milk of herbivore animals, river and lake aquatic products, wild C_3 plants	from -21 to -17	from +11 to +15
Model 3: marine products are predominant	from -17 to -15	from +15 to +18

Table 3 Stable isotope ratio measurements for humans from the Early Catacomb culture.

Kurgan, burial, sex, age	$\delta^{13}\text{C}$, ‰	$\delta^{15}\text{N}$, ‰
Peschany-V: k. 1, g. 5, male 50 – 55	-16.26	+16.63
Mandjikiny-2: k. 37, g. 3, male 15 – 16	-16.52	+16.52
Khar- Zukha -1: k. 5, g. 3B, female senilis	-15.42	+18.10
Temrta III: k. 1, g. 6, female? male? 25 – 30	-15.44	+18.65

Early Catacomb graves (190) are not as numerous as the Yamnaya (732) and Eastern Manych (856) graves. That is why it might be suggested that small family groups penetrated into the steppes where they lived in the course of roughly one generation (20-30 years). Another explanation is as follows: independent groups of herders moved to the Yergueni watershed plateaux only in summer and stayed there if winters were warm and with little snow.

Ethnobotanical data might help us reconstruct one life story. The Early Catacomb grave of a 20-25 year old woman was uncovered in the Temrta burial ground located on the western slopes of the Middle Yergueni Hills. She died in childbirth. Her child was buried beside her¹. All samples taken from the bottom of the grave, under the skull and pelvis of the skeleton, contained pollen of *Chenopodiaceae*, *Artemisia*. This spectrum indicates that the funeral ceremony took place in July-August. Phytoliths of *Artemisia Lerhiana* were discovered in the stomach area of the dead person². The shape of phytoliths could differ because of the geographical location (Gol'eva 2001). In the Temrta case the shape of *Artemisia* phytoliths was not local, but was similar to the *Artemisia* phytoliths from samples obtained from the Taman Black Sea region. The data correlate with the North Caucasus type of ornamentations which were used to decorate her garment³. Therefore, we might assume that the young pregnant woman spent the spring somewhere near the Black Sea coast, probably in the Taman peninsula, but she had to move with her family to the north where she died in childbirth during the hot steppe summer.

Isotope data confirm that some Early Catacomb individuals could move to the steppe from the coastline areas of the Black or Caspian Seas of the North Caucasus region. Three diet models have been proposed for the Steppe population of the Bronze Age (Shishlina et al. 2012) and are presented in Table 2. Model 2 is characteristic for the humans whose main area of occupation was the steppe. Those people consumed flesh/milk of herbivores, river and lake aquatic products, and wild C_3 plants. These data are confirmed by ethnobotanical evidence (Shishlina et al. 2007).

To provide an example, an Early Catacomb *senilis* female from steppe Khar-Zukha has a very high value of $\delta^{13}\text{C}$, i.e. -15.42‰, and a very high value of $\delta^{15}\text{N}$, i.e.+18.10‰ (Table 3). The

aforsaid woman consumed marine food. Maybe she moved to the open steppe from the North Caucasus coastline region. She died surrounded by people whose diet system was different. We are not able to identify the reasons why she moved to the deep steppes from some maritime coastline (Black Sea? Azov Sea? Caspian Sea?), but it is clear that she did not spend the last 10 years of her life on the steppe, but very close to the sea (Shishlina et al. 2009).

Other Early Catacomb individuals also consumed marine food (Table 3). It is possible that they moved to the open steppe from the coastline region (Black Sea? Caspian Sea?), perhaps due to economic problems, in order to search out new resources, or to participate in trade or pastoral campaigns. What we know for sure is that that they died surrounded by people using a different diet system (Shishlina et al. 2009).

East Manych Catacomb individuals (a female of reproductive age, an adult male, an old female and an old male) (Table 4) may have been members of family groups which migrated in winter seasons to the coastal areas of the Azov and East Black Sea. These individuals have the highest values of nitrogen and carbon (Shishlina et al. 2012). These values indicate marine food consumption (North Caucasus area?) (Shishlina 2008).

Strontium isotopes analyses have been carried out and it is evident that some individuals with a 'marine diet' were not born on the steppes, and are considered to be 'non-local'⁴. For example, one man buried at Mandjikiny-1, kurgan 14, grave 1, was not born in the place where he was buried (Shishlina 2004b). We do not know the circumstances of such an event, but we know that the individual was buried in summer, special sacrifice places were made around the pit, and unique clay stamps may indicate that the person had a special position in East Manych Catacomb society and travelled across the Steppes and some other areas. We assume that those regions could be located in the Caucasus very close to the sea (the man is classed into the 'marine diet system group') and that the male individual could have participated in some seasonal campaign (summer campaign) carried out for some unknown purpose.

Variations of isotope data obtained for each culture as well as for individuals buried in different burial grounds can be explained by the migration of small family groups along numerous routes

¹ Excavation of the Steppe archaeological expedition of the State Historical Museum 2006. Data are not published.

² Phytolith analyses was conducted by Anatoly Bobrov. Data are not published.

³ Identification of the *Artemisia Lerhiana* was done by Anatoly Bobrov.

⁴ The analyses have been done by Yulia Larionova and are not yet published.

Table 4 Stable isotope ratio measurements for humans from the East Manych Catacomb culture.

<i>Kurgan, burial, sex, age</i>	$\delta^{13}\text{C}, \text{‰}$	$\delta^{15}\text{N}, \text{‰}$
Peschany-V: k. 1, g. 6, male 30 – 35	-16.09	+16.14
Temrta III: k.1, g.6, female? 25-30	-15.4	+18.9
Mandjikiny-1: k. 10, g. 2, female 45 – 40	-16.52	+16.52
Mandjikiny-1: k. 14, g. 1, male 30 – 35	-16.59	+17.69
Zunda-Tolga I: k.9, g. 1, male 50	-16.9	+14.1
Zunda-Tolga I: k.10, g. 2, female 50-60	-16.5	+16.3
Zunda-Tolga I: k.10, g. 3, male 35	-19.3	+14.1

Table 5 Stable isotope ratio measurements for humans from the Yamnaya culture.

<i>Kurgan, burial, sex, age</i>	$\delta^{13}\text{C}, \text{‰}$	$\delta^{15}\text{N}, \text{‰}$
Mandjikiny-2: k. 11, g. 3, women 45 – 50	-16.62	+18.09
Chilgir: k.2, g.3, male maturus	-15.4	+17.6
Mu-Sharet-4: k. 11, g 3, woman 14 – 17	-16.55	+15.36
Khar-Zukha: k. 2, g. 3, woman 20	-16.08	+13.74

across different geographical zones including the Steppe and the Caucasus. Apparently, these groups used different food resources. Summer and winter pastures could be located in open steppe areas, near river valleys as well as in the North Caucasus foothills, and along the coastlines of the Caspian and Black seas.

Therefore, these examples give us an idea about a possible range for mobility (Wendrich and Barnard 2008). Groups of people moved slowly during several weeks, changing pastures (the Yamnaya case) or participated in seasonal movements that lasted for several months (the Early Catacomb, Steppe North Caucasus and East Manych Catacomb cases). The Yamnaya steppe population seldom penetrated into the Caucasus, though such populations repeated their movements every year. But during their development the period of movements varied and could last from several weeks to several months for the Catacomb culture. The Steppe and the adjacent areas of the Caucasus were exploited by multicultural Caucasian and steppe populations together (Shishlina 2008).

Population movements: cross-cultural marriages and social networks

Isotope data again may provide us the evidence that some people could migrate because of personal reasons, for example, marriage or possibly visits to relatives. Some examples follow:

The diet system of young Yamnaya females from the steppe area was based on marine food (Table 5). Seasonality data obtained for these graves indicate that these people were seasonal pastoralists and must have moved from one pasture to another. It appears that two young women of 14-17 and 20 years old were born somewhere near the coastlines of the Caspian or Black Seas (North Caucasus region) and later married and moved to the steppe. As newcomers they lived in a new steppe environment for a short period and died. At least the isotope data confirm this hypothesis, i.e. the isotope values of the young females differ from the isotope values of other local steppe people, whose diet system is typical for Model 2 (Shishlina et al. 2009; Shishlina et al. 2012).

Similar isotope data for a female of 45-50 year old and a mature male indicate that they also spent at least their last 10 years, if

not their whole lives, near the coastline and consumed quite a lot of marine food. They probably visited their steppe relatives and died far from the sea (North Caucasus coastline, probably). These data clarify movements of the Yamnaya population, i.e. in some circumstances migration of the Yamnaya people could go beyond the small pastoral routes and include long-distance movements.

Isotope data from an old female and an adult male from the East Manych Catacomb Zunda-Tolga kurgan 10 (Table 4) indicate that the male consumed a 'local steppe diet', while the female may have come to the steppe for a visit from the coastline area of the North Caucasus.

Conclusions

It may be concluded that the Caucasus populations and steppe populations were engaged in mutual relationships for several thousand years. Their economy was based on the exploitation of local resources of two adjacent areas and this led to a high level of mobility of different population groups and individuals. The examples provided show that the motivation of movements could be general and linked, for example to the deterioration of climate, or personal, connected with marriage or visits of relatives.

The people who lived in the steppe initiated a new economic system, i.e. mobile nomadic stock-raising, based on the use of all natural resources and a multi-level system of interaction. Steppe people did not develop in isolation from adjacent areas. The Caucasus became one of the 'key neighbourhoods', so to speak. The Caucasus was rich in metal resources; craftsmen produced tools and weapons, prestigious ornaments and symbols of power, such as stone axes (Fig. 3). The landscapes and food resources were always very attractive.

Caucasus populations were also looking very attentively at vast, sometimes vacant lands located so close to the north, and used all possibilities to exploit steppe environmental areas. Penetration of southern groups to the north steppe could be successful or disastrous. However, apparently some Caucasian individuals or even small families, or groups of families, migrated and settled down in a new ecological and cultural environment. Applying new



Fig. 3 Mace heads and axe. Stone. East Manych and Mu-Sharet burial ground. Kalmykia steppes. 2500-2300 calBC.

methods in conjunction with the data has helped us gain a better understanding of how it all happened.

Hence, a multi-layer stratum of Bronze Age steppe and Caucasian cultures has been reconstructed. Archaeological resources show that different cultural groups used a similar type of grave structure, including their interiors. Their rituals were accompanied by the use of similar, or even identical, material objects in a mixed or multicultural environment (Shishlina 2008). This could happen only under the degree and quality of changes in early societies caused by mobile pastoralism which led to multicultural interaction. The development of convenient migratory north-south steppe-Caucasian routes and vice versa led to mutual enrichments of the populations living in both regions.

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CATCHMENTS, SETTLEMENT CHAMBERS AND DEMOGRAPHY: CASE STUDIES AND GENERAL THEORY IN THE GREEK LANDSCAPE FROM PREHISTORY TO EARLY MODERN TIMES

John Bintliff

Abstract: Kristian's work has ranged from meticulous landscape analyses to wide-ranging syntheses of intercontinental social processes. This paper will focus on the regional settlement analysis that has always been the building-block of his broader research perspective. It will review the background to Catchment Analysis, Siedlungskammer Theory, and related territorial studies including market-theory, as well as their subsequent development and recent applications to Mediterranean, and in particular Greek, landscapes. The Annales concept of Structural History and landscape phenomenology will complete the picture.

Keywords: Catchment, Thiessen, market, central-place, phenomenology

Introduction

Kristian's intellectual scope has always been breathtaking and a Festschrift in his honour will have to range widely in topic, geography and the number of countries where he has friends and admirers. It is appropriate then for me to choose just one aspect of his many research interests as a gift to honour his achievements in Archaeology, and this will be an early but never-neglected focus of his work – the Landscape (cf. Kristiansen & Paludan-Müller 1979; Kristiansen 1998; Earle & Kristiansen 2010).

Catchment Analysis and its antecedents

When Vita Finzi and Higgs (1970) published their pioneering paper outlining the new methodology of Catchment Analysis in landscape archaeology, there already existed a rich older package of concepts and applications to human territories. Von Thünen's nineteenth-century model of the Isolated Town, with its radial land use hinterland tied to distance and physical geography, had been followed by Christaller and Lösch in the earlier twentieth century with their geometric, interlocking mosaics of central-place territories tied to transport systems, marketing and other forms of servicing of rural districts (Bintliff 2002a). In a different development, more relevant for smaller rural settlements, the German tradition of early twentieth century Historical Geography (*Landeskunde*) had identified the concept of the settlement chamber (*Siedlungskammer*), a small district with sufficient resources to nourish a flourishing agropastoral settlement, perhaps also with other advantages such as a favourable location with regard to routes by land and sea. Barring historical eras of complete landscape desertion due to war or disease, the theory went, one might expect to find a settlement in each of these chambers, although the location would tend to migrate around the circumscribed district from age to age as a result of additional locational factors (more, or less, need for security, more self-sufficient economy or one more geared to external trade, etc.). A fine but totally neglected example of such an analysis is the study of long-term settlement-chambers in eastern Crete by Lehmann (1939). Settlement chambers have not received sufficient attention in post-war Landscape Archaeology, but long-term studies show that the concept has a powerful potential for shedding insights into contrasts in locational and socio-economic behaviour over time (Bintliff 2000a). One recent example from my own Boeotia

Project in Greece can be cited: the Valley of the Muses is a fertile chamber surrounded on three sides by mountains, and sufficient in scale to support at least one large village-small town plus a series of satellite farms and hamlets. Our total survey of the Valley produced some 50 archaeological sites, but from at least the Early Bronze Age to the present just one nucleated settlement dominated the landscape, although its location shifted over time between three micro-locations within the Valley (Bintliff 1996).

The excellent and large-scale results of French archaeo-geographical teams in southern France, especially within the framework of the Archéomedes Project, have also allowed us to see a similar long-term process of settlement chambers, in which a progression from Early to Late Roman times and then into Early and High Medieval times focuses on key nodal communities in the landscape, sometimes existing isolated, sometimes surrounded by dispersed satellites (Favory & Fiches 1994; Raynaud 2000).

In the background of all this rather geographical-deterministic modelling, the French geographer Vidal de la Blache (1923) offered us a more cautionary approach, emphasizing in his concept of *Possibilism*, the 'enabling and constraining' factors offered by the physical landscape in affecting settlement location and the creation of territories (Holt-Jensen 1990).

Vita Finzi and Higgs created a practical field methodology for essentially auto-subsistence settlements, whether hunter-gatherer or agropastoral, in which distance measuring in walking-time was used to set maximum limits to likely exploitation territories from a given archaeological site, then the land potential of the landscape thus included was analysed for varying forms of land use. Strong contrasts emerged, between for example early farming catchments where light and well-watered soils were preferred, and later farming catchments where the advent of traction-ploughs and 'secondary products' derivable from domestic animals (Sherratt 1981) encouraged the human colonization of drier interfluvium or otherwise heavier soils and land best suited to grazing.

Improvements in Territorial Approaches

Problems emerged quite quickly with the application of Catchment Analysis (CA) without undermining its radical potential. The actual as opposed to the maximum likely radius of exploitation

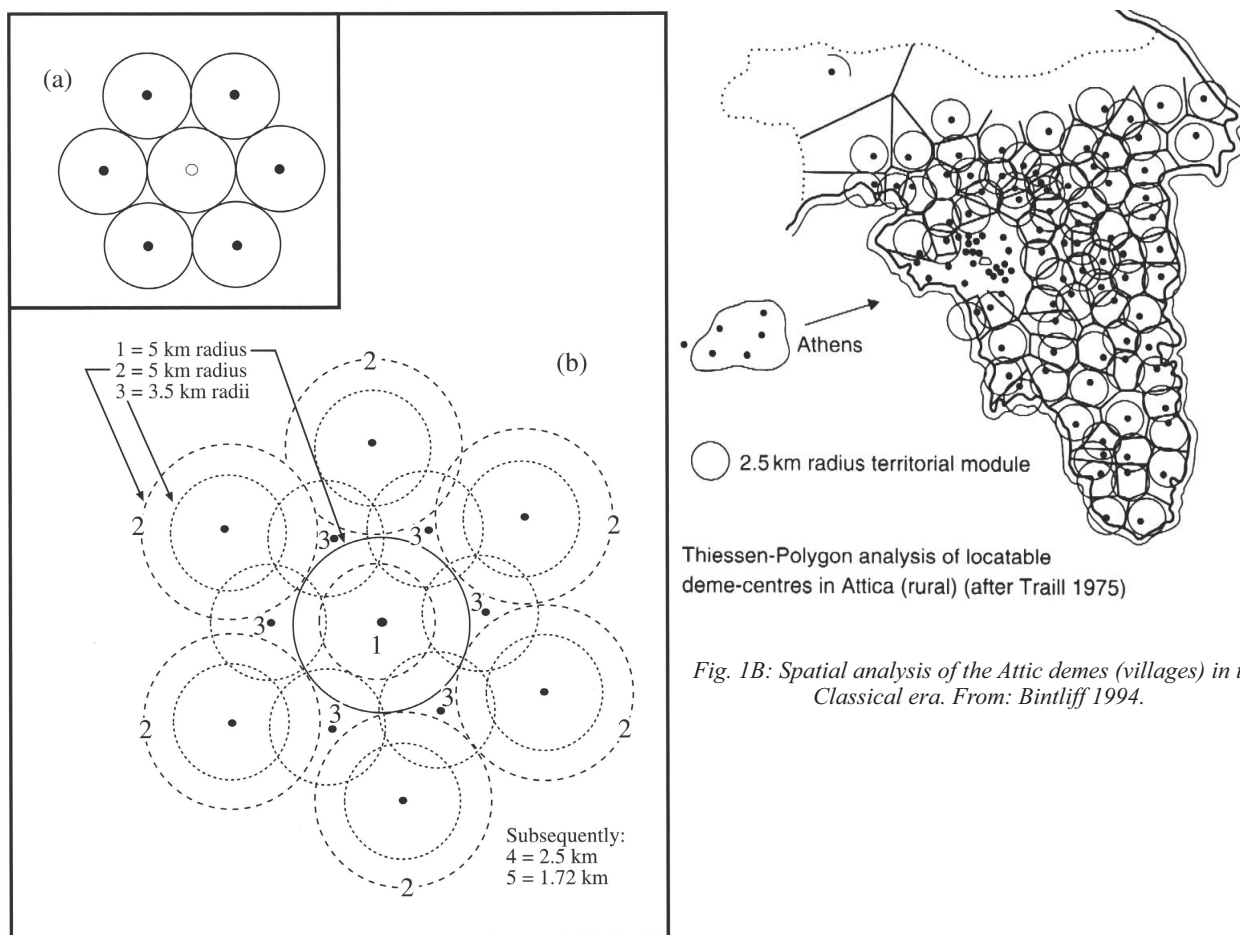


Fig. 1A: Model for the infilling of a landscape as population rises: territories get smaller as villages pack into equal-sized cells sufficient to sustain them. From: Bintliff 1999.

ought reasonably to vary according to the size and population of each archaeological site, whilst suitable resources might not lie in neat circular radii around the site, but be asymmetric to the settlement. The method also was designed to work with a single site, and when a series of contemporary settlements adjacent to each other came to be studied, problems arose with territory overlaps and apparent 'empty zones' lacking an exploiting community. Assistance was soon sought from a spin-off out of the geometric human geography tradition mentioned earlier. Within the New Geography which came to fruition in the 1960s to early 1970s, Locational Analysis was a leading sector (Haggett 1965), and here the method of Thiessen Polygons offered a simple tool to clarify the likely relation between maximum and actual territory associated with particular sites in a contiguous network. A series of adjacent settlements is identified, and argued to have a comparable status in sharing out the exploitation of the surrounding landscape. Lines are drawn at midpoint between all neighbours, leading to a series of polygonal cells, within which all the land which is closest to one particular settlement is enclosed. A fundamental assumption is that each community is more likely to own land which is closer to itself than any other settlement. Although an idealized and over-simple concept, nonetheless the method probably gives a good impression of the general relation between sites and their territories, provided that the series of settlements really consists of competing centres of exploitation. If, for example, a small town

included in its close vicinity a hamlet, the urban farmers might well have owned estates which extended around that hamlet and beyond, in which case a Thiessen cell-boundary half way between them would be erroneous. More effective would be cells created around adjacent small towns, then a separate catchment for the hamlet in which its food needs could predict a radius of land needed to support itself, perhaps a preferential zone nested within the larger cell of the town of which it was a satellite (cf. Wilkinson 1994).

A fruitful approach combines the concept of catchments with Thiessen polygons. If one takes a network of supposed comparable settlements, and creates their territorial cells using Thiessen polygons, one can subsequently compare the qualities of these cells as catchments, whether in terms of land use types, or the size of the areas enclosed. In the 1990s I found that in the progressive settlement infill of the southern mainland Greek landscape in the Iron Age, leading up to the creation of the classic City-State, regions were settled in a modular fashion, rather like the repetitive and similar-scale of territories shown by biologists for animal populations (Bintliff 1994). In the central Greek region of Boeotia during the Geometric-Archaic era, for example, nucleated settlements, villages and towns, when subjected to Thiessen analysis, revealed a regular cellular structure. When the fertile land in each cell was enclosed within a circle radius of 2.5 km, it

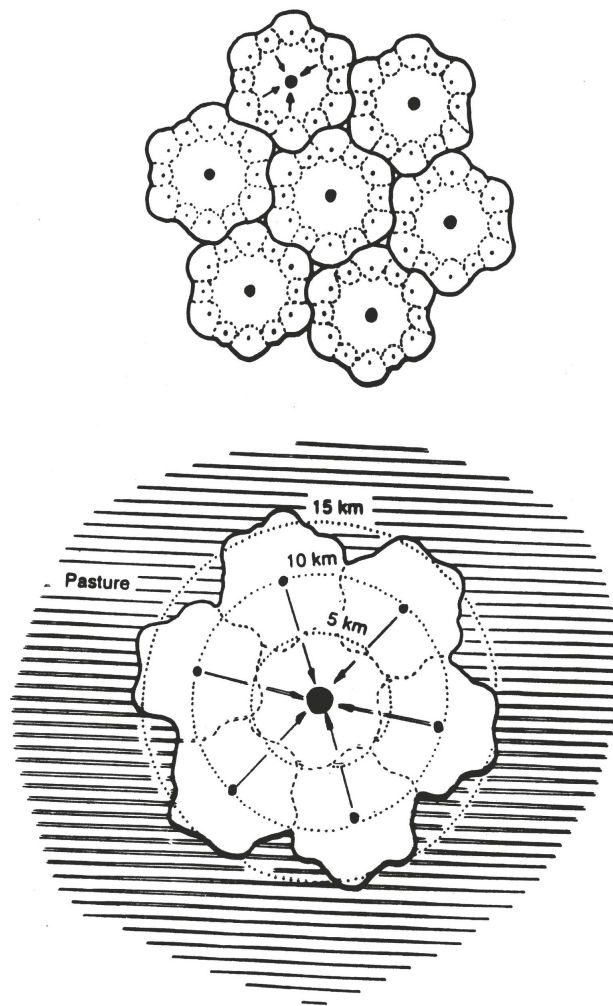


Fig. 2 Wilkinson's model for the rise of regional polities up to a 15 km radius level. From Wilkinson 1994.

appeared that most territories possessed land of this approximate area. Intriguingly, the same pattern appeared when the Archaic and Classical villages and small towns of the neighbouring province of Attica were analysed in the same fashion. It thus could be shown that a fundamental building block in the early historic colonization of the Greek landscape was a settlement with a territory some half-an-hour walking distance across. I termed these modules *proto-poleis* because only a few grew to become independent city-states. In some cases it may be possible to correct these generalized boundary-creator methods using preserved ancient border-stones, such as have been found in several Attic 'demes' or village territories (Lohmann 1993), and individual city-states elsewhere (e.g. Meliteia, Kirsten 1956).

Ancient historians Ruschenbusch (1985) and Hansen (2004) have brought together impressive corpora of demographic and spatial data relating to the subsequent development of the true Greek City-State or *Polis* of the Classical era. In general it seems that such city-states were almost all small in scale and territorial radius (5-6 km or one-hour on foot for the vast majority of the Aegean states). This could represent the incorporation of several *proto-polis* settlements within an emergent dominant town. Athens clearly stands out with an extraordinary expansion of

power over some 140 villages and small market towns within its state of Attica, whereas Boeotia is closer to the norm with some 14-15 mature city-states crystallizing out of the more numerous preceding *proto-poleis* (note that the two regions are equal in size). Similar work has been done by a University of Lyon team led by Bruno Helly in Thessaly, northern Greece, in revealing a regular network of polis territories of comparable scale to general prediction, in the towns of that province (cf. Auda et al. 1991).

With the advent of Geographical Information Systems (GIS) into Archaeology during the 1990s, it became possible to create Thiessen polygons rapidly and with a wide range of parameters. The so-called 'cost surface' variable can calculate not just distance and time spent moving out from a site, but walking modified by steep slopes (for a practical example applied to urban farmers travelling into their hinterland estates from an ancient Greek city see Howard 2007).

Market Towns and Central Places

When we introduce the concept of a *Central Place*, such as the ancient *Polis* with its subordinate rural villages, the approaches of CA and of Thiessen polygons also allow a further dimension to the basic model of a landscape exploited directly from an archaeological settlement for obtaining food and other raw materials. Central Places provide services of a political, judicial and of course marketing nature. However, in the Pre-Industrial world, with the exception of the largest imperial centres and harbour towns, and specialist mining communities, it seems to have remained the case that a large proportion even of city-dwellers were involved in rural farming and herding. This implies that all settlements in such Central Place systems possessed their own catchments immediately surrounding them. If we return to the earlier examples of the *proto-poleis* of Boeotia and the rural settlements of Attica, during Classical times the territories I identified remained essentially farmed from these numerous settlements, even when most had become submerged politically into satellite status of the dominant city-states. The recurrence of a 5-6 km radius for Greek city-state, around 1 hour on foot, argued in the original CA theory to be a natural boundary for regular commuting, allowed town dwellers to control land in newly-dependent satellite territories and rural dwellers to participate in town life.

Human Geography has also been active in formulating theories and producing case-study applications of central places as regional markets. Ethnohistoric studies suggest that a boundary to the natural efficiency of such commercial foci lies around 15 km or 3 hours on foot radius. This range allows rural peasants to travel into the centre and back within one day, to conduct economic transactions or engage in other public services (Bintliff 2002a). Geographers have indeed found that empirical studies confirm such relationships between agropastoral rural villages and their regional market towns.

Clearly the market catchment coincides with possible limits to small-scale political systems, since control from the centre and non-economic services would also reasonably be more efficient within a day-return from the periphery inwards, and from the centre outwards. It is thus not surprising that Wilkinson (1994) observed this with the city-states which emerged in North Mesopotamia during the Early Bronze Age. In a first stage, a number of rural communities with territories of some 1 to 2.5 km radius became satellites of a small central place with a radius of 5 km. Later a number of such simple central-place systems

(comparable in scale to the 'normal polis' of Classical Greece), became satellites to a regional city-state, producing a territory of 15 km radius.

The study of ancient state territories and market or central place boundaries is still relatively undeveloped despite its important potential for producing general models for settlement systems in dynamic evolution. Morley's (1996) fine analysis of market towns in the Roman Campania is a notable exception. Nonetheless this field can already provide major insights for archaeologists. Thus Bekker-Nielsen's (1989) major study of urbanism in the western provinces of the Roman Empire, emphasizes the extraordinary contrast between a densely-urbanized Italy, southern Spain and southern France, and the low density of towns in the remaining regions of these provinces. The disfunctionality of such urban networks leads us to part company with using maps restricted to the 'official' urban centres of the Empire, and postulate by necessity a dense grid of 'unofficial' market towns filling the empty interstices, at a minimum of around 30 km interval from each other, to provide services for large rural populations (Bintliff 2002a). Indeed archaeologists in Roman Britain have recognized such 'small towns' at sufficient densities to act in this role (Brown 1995). For predictive generalizations for the size of territories needed to sustain the food requirements of Bronze and Iron Age settlement nucleations in the Mediterranean from within their own regions, see Bintliff 2002b.

Questions of Territory Scale and Social Filters

Earlier we observed that the Catchment Analysis maximum exploitation boundaries (one hour walking for agropastoral sites, 1.5 for hunter-gatherer or specialist pastoralist sites), might well be too extensive for the needs of smaller communities or those with a small-radius, highly-intensive form of land use. Thiessen Polygons and the use of ancient sources can assist the delineation of the most likely real boundaries of site territories. When a landscape is colonized, or recolonized after a collapse in human occupancy, we might model a process of settlement infill in which two possibilities are likely to recur. Firstly, pioneer settlements may exploit to varying degrees of intensity a full catchment of say 5 km, and as population rises, or new colonizers enter the region, a network of such large territories could emerge. If the land is rich, and the population of each village is low relative to the potential carrying-capacity of these cells, then further demographic growth might result in a series of interstitial settlement infilling by daughter-settlements budding off the first series of colonies. If on each generation of new settlements the existing territories were shared between old and daughter communities, we find an ideal series of increasingly smaller territories being created: from an initial radius of 5 km, we shift to 3.5, then 2.5, finally 1.7 km radius catchments (Bintliff 1999). Now in fact it is possible when we study many examples of agropastoral settlement networks to find landscapes which appear to have stabilized at one of these modular scales of territory. Some may indeed have developed as a result of village fissioning as here postulated.

But the second model, also likely to have occurred frequently, is one where colonizing settlers space their villages at a traditional lesser interval, rather than beginning with the maximum theoretical catchment. One of the most frequent empirical spacings is a village radius of 2-3 km or half an hour walking to the borders, and this may reflect an optimal balance between the amount of land needed for a self-sufficient village of medium size and the logistical cost of daily movement to and from the exploited landscape. The Greek examples noted earlier fall neatly

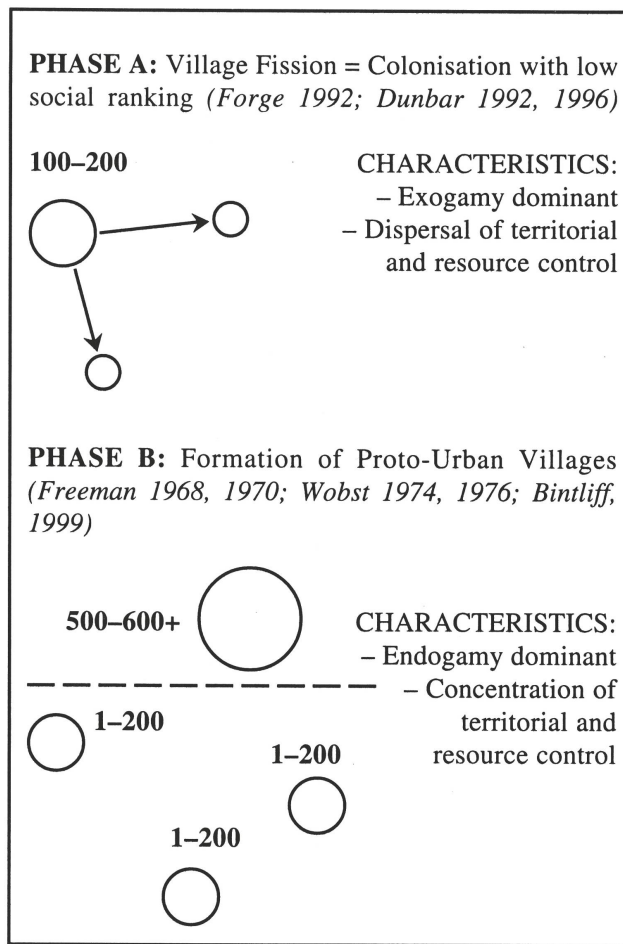


Fig. 3 From: Bintliff 2000b.

into this scale of territory. In the European High Middle Ages however, when some regions experienced overpopulation, we also find evidence for the smallest division of villages a mere 1-2 km apart. Also, in the Attica case study presented earlier, whilst the true distant countryside of Athens is dominated by settlements with half-hour radius territories, the analysis found a contrasted pattern of villages in the immediate inner hinterland of the major city of Athens-Piraeus, of 1-2 km radius scale; I suggested this reflected a Greater Athens with clusters of dense communities farming intensive market gardens for the swollen population of the metropolis.

However, this scale effect of village size related to a series of quanta for associated territory radii, if empirically-verifiable, raises the very significant question: what controls the size of settlements? We can imagine that when a pioneer settlement with a large potential territory grows more populous, it could either fission and infill its surroundings with its daughter settlements, or - the fertility of its pioneer catchment permitting - it could alternatively simply keep on growing, until it had reached the limits of its catchment's food support potential. Now in fact, if we look carefully at ancient settlement networks and the balance between population and resources, it is often the case that settlement fission occurs well before any need to do so from overpopulation. In fact we know from ethnohistoric research, that social factors play a vital role in determining how large a settlement may grow to, in pre-Industrial times (Bintliff 1999,

2007). In communities with a low level of social stratification, and where interpersonal relations are central, so-called *face-to-face* societies, it has been shown that settlements will be limited to populations of 150-200 people or less. Once those limits are passed, fission into daughter colonies occurs. A very fine example of this has been argued for in the long-lived Early Neolithic tell-villages of northern Greece by Perlès (2001). Villages of this scale, with average 1-2 km radius catchments, prosper for more than 1000 years in the fertile plains of regions such as Thessaly.

I have been particularly interested in what happens if settlements break this low demographic barrier and continue to grow *in situ*. Again according to ethnohistoric research, this requires a political restructuring of the community, in which either a vertical power hierarchy is created, or the settlement is organized through collaboration between a series of semi-autonomous quarters or *barrios*. There is now evidence to suggest that many 'town-like' settlements were in fact agglomerations of smaller, face-to-face societies (e.g. Middle Bronze Age Argos; Iron Age Argos, Athens and Knossos in Greece; and the remarkable Early Neolithic town of Chatal Hüyük in Turkey (Düring and Marciniak 2006). But whether a larger settlement emerges from the latter form of horizontal multiple subcommunities or from the rise of a controlling elite, the results appear to be the same, and this is a cross-cultural phenomenon of immense importance for social evolution.

One major drawback to the face-to-face 150-200 person settlements is their absolute dependence on several of their neighbours for marriages, to create a viable healthy population. Exogamous marriage often also involved sharing land, stock and other property between villages, but does create strong intercommunity ties, which will certainly help account for the long and peaceful maintenance of such systems, as with the example cited for Neolithic Greece. If however one settlement breaches this demographic limit and passes beyond some 5-600 inhabitants, it can become almost self-sufficient in terms of intermarriage, and hence through endogamy the community's land and its social networks will be almost entirely introverted within the settlement itself. This gives rise to a *Corporate Community* (Freeman 1968; Bintliff 1999). In many societies, these larger, more intuned societies develop a range of 'emergent' new functions typical for city-states: centralized administration, reassignment of land, concepts of citizenship, rich symbolic culture, strong expressions of identity, and competition or aggression towards neighbouring communities. The importance of warfare in city-state societies is closely-tied to the closing-off of membership of such communities to large-scale intermarriage with adjacent centres, and the maintenance or even predatory expansion of community land against neighbours. Anthropologists have shown that the degree to which territories are made exclusive and defended is correlated with factors such as sedentism, localization of high-quality resources and dependence of a community on defined areas of their environment (Dyson-Hudson & Smith 1978).

New Directions in Territory Research

The advent of GIS in landscape archaeology brings other novel insights into the archaeologist's methodologies. Phenomenology has also become a recommended addition to the analysis of land use and movement within a territory (Wheatley & Gillings 2002). The relationship of past societies to their territories thus also includes vision, sound and smell, of which the first is a now much-used aspect achievable with GIS. In the context of a central place such as an ancient Greco-Roman city, it is of interest to know if

the inhabitants of the countryside, in farms and villages, sought to locate their settlements within view of their focal town, or were more concerned with living in good locations to live on or exploit their estates. Although some rural networks are well-positioned for visual and auditory contact with their city (for example in the auditorium-like fertile basin around the city of Hyettos, and around the great village/small town of Askra in the Valley of the Muses, both in Boeotia), this was probably an unintended result of physical geography, since in the case of the inner hinterland of the city of Thespieae (in the same province) (Howard 2007), both intervisibility analysis and our personal experience of auditory conditions gave the surprising result that rural settlements were almost all disconnected from the town. However, when we studied the intervisibility of the rural settlements amongst themselves, a strong positive result emerged from GIS: farms usually were visible to more than one other farm. This would have been very advantageous for reasons of support, security and simple human contact for dispersed rural residents.

Systematic field survey has become the main tool in studying landscape history and prehistory in Europe and the Mediterranean (cf. Bintliff et al. 2000), providing us with hitherto unexpected densities of past settlements analysable by era. An impressive example of a period-focused use of such data in France can be cited from the work of Raynaud (1996), dealing with the reality or otherwise of the 'Third Century AD Crisis' in the Roman Empire.

Hyper-intensive surface site surveys now operate so-called 'siteless surveys', where the entire landscape is analysed at the level of the individual surface artefact. This has a number of advantages, such as allowing us to detect eroded or partly buried sites, but in terms of the study of territory it offers a special novel insight. We can suggest the boundaries of a settlement's territory through the use of catchments and Thiessen polygons, but very rarely find confirmation in the form of ancient boundary markers or their description in texts. What 'offsite' archaeology can sometimes tell us, however, is where the human impact from a particular settlement can be registered, through the deposition of activity debris in the surrounding landscape.

Two forms of site impact on their surroundings can be mapped on the basis of GIS-assisted offsite artefact recording. The first I term a *site-halo* and regularly surrounds ancient settlements for distances of tens to a hundred metres or so. Radial scatters of discarded broken artefacts, including pottery, building material and lithic or glass fragments, appear to have been spread into the land immediately around settlement sites due to a number of overlapping human activities. A natural component is the action of weather, wind and rain blowing or washing finds out of their original context in the site area. Subsequent land use, notably ploughing but also the activities of grazing animals, can contribute to the smearing of surface finds out of the site core and into surrounding fields. The dumping of domestic rubbish during site occupation may also occur around the site peripheries. Finally, many past societies operated a land use system known as an *infield-outfield* economy, where the land closest to the settlement was devoted to 'garden' culture of a more intensive kind than the open-field land use further out. To assist the fertility of the infield, waste products from human and animal contexts within the settlement may be spread onto the inner territory as manure. It seems likely that where these site haloes are dense around ancient settlements, deliberate waste disposal was practised, either dumped on the site fringes to clean-up the domestic area, or to promote the crops grown intensively in market gardens. These latter activities show us areas belonging to the site. Good examples

can be provided from my Boeotia Project (Bintliff 2006; Bintliff, Howard and Snodgrass 2007), where all farms and villages from Greco-Roman to Medieval and Post-Medieval times exhibit distinct haloes of ceramics which are too strong to be accounted for by unintentional smearing out of settlements. Clearly the suggestion of market gardens gives us the exciting possibility of delineating a particular part of the actual landscape exploited from a settlement, and its mode of land use.

A second, and even more intriguing result from intensive surface survey has been to identify much more dramatic and widespread scatters of offsite finds surrounding ancient sites to considerable distances. This phenomenon was first mapped and published for the Near East by Wilkinson (1989), whose careful examination of the material and its geoarchaeological context led to the interpretation that this represented large-scale agricultural manuring of open fields. The radii of such manuring debris, which appears to have indiscriminately mixed broken tiles and potsherds amidst the food and hearth debris, and animal dung, varied in scale according to the size of the site, with smaller settlements having open field manure radii approximating to 1-200 m, whilst towns extended their fertilizing radii to distances of several kilometres. On our Boeotia Project all of the six ancient towns surveyed by us have associated manuring carpets reaching 1-3 km into their surrounding cultivated landscapes. In the southern sector alone out of Thespieae City, we counted almost 1.5 million such offsite sherds, not associated with rural sites, reaching to some 2.5 km into the fertile hills. A cost-surface calculated with the aid of GIS allowed Howard (2007) to show a close correlation between such offsite densities and a combination of distance from the city and the steepness of the slopes encountered. In other words, we are mapping the movements of urban farmers into the inner territory around their city, as they transported fertilizer to their sustaining estates.

Yet one more insight, but of immense importance, derived from this study in Boeotia. Wilkinson observed that landscape ‘outfield’ offsite carpets, as opposed to the ‘infield’ haloes for market gardens which all historic period sites possess in Boeotia, tend to occur very rarely and only in certain periods. He argued that this reflects unusual periods of maximum intensification of land use. To test this hypothesis we took a series of pottery samples from the offsite carpet around Thespieae City. Although the rural sites belonged to many different periods, remarkably some 80% of the offsite carpet belonged just to one period – the broadly Classical Greek era. This in fact was the phase when the city itself as well as the whole region of Boeotia reached an unparalleled population climax. Since some 75-80% of Classical populations are believed to have resided in towns, and commuted to their fields, the dominant signal of land-use intensification should be, as demonstrated here, an urban-derived manuring regime. We feel certain that the limitation of mass-fertilization on such a scale to this one period is symptomatic of overpopulation and stress on food production.

Settlement and Territory and the *Longue Durée*

An increasing number of archaeologists have been attracted to the concepts and methods of the French *Annales* school of historians (Bintliff 1991; Knapp 1992). The integrated treatment of processes occurring at different timescales, and an interest in long-term changes, together with an holistic approach to method and theory from linked disciplines, is the ideal framework for Landscape Archaeology, where our analytical focus is that of settlement systems in the same countryside across millennia. We

have already discussed the related concept of *Settlement Chamber* studies, where a particular small sector of the landscape forms a kind of laboratory for us to observe and try to interpret minor and major changes in the settled landscape over many phases of human occupation. In the light of the previous topic of climax phases of land use and population density, we can now turn to an issue of immense interest for social evolution in the long-term, and that is the detection of recurrent cycles of civilizational growth and decline. Here I have been stimulated by essays on this cyclicity for agropastoral societies by the *Annaliste* historian Le Roy Ladurie (1966, 1982), as well as by similar work by the archaeologists Adams (1978) and the geographer Butzer (1980). From the German *Landeskunde* tradition I would further highlight the wonderful case-study by Kossack (1974).

If we take for example the province of Boeotia, in several districts our intensive fieldwork allows us to calculate the population density in town and country for contrasted eras, and this can be controlled from historic sources in several phases. This allows us to ask very big questions, such as: when the Classical Greek civilization of city-states dominated in the region, around 400 BC, how does its demography and land-use intensity compare to the era of the sixteenth century AD, when Boeotia was part of the highly-flourishing Early Ottoman Empire (Bintliff 2005)? Army and tax records suggest that Classical Boeotia had perhaps some 150-200,000 inhabitants, whereas the Early Ottoman total is a mere 40,000. Our archaeological survey which can calculate the exact distribution of Classical population between cities, villages and farms, can be brought into direct comparison, settlement chamber by settlement chamber, with the exact populations for each village in the same province, provided from Ottoman tax records in the sixteenth century.

Here a more complex picture emerges. During the fourteenth century AD, much of the Boeotian regional population died off, victims of the Black Death, warfare and piracy. The Greek survivors clustered in large refuge villages in upland locations, whilst the Frankish, and later, Ottoman, rulers reacted by inviting large numbers of Albanian settlers to colonize the largely-abandoned landscapes. Within 150 years the stability and favourable social and economic rule of the Ottomans encouraged a major demographic recovery of Boeotia, climaxing around AD 1570. From this point on, however, new stresses and a breakdown in the Ottoman state led to a gradual decline once more.

Interestingly, we detected two different levels of settlement growth and land use. The numerous new Albanian villages grew

The approximate radius of significant field scatters surrounding archaeological sites in the Middle East (total sample: 19 settlements) (from Wilkinson 1994)

Settlement size	Radius of scatter (km)
Hamlets and farmsteads < 1.5 ha	0.2-0.4
Villages 2-9 ha	0.6-1.0
Small town 10-29 ha	1.3
Large town/ city > 40 ha	2.2-6.0

Fig. 4 A: Agricultural manuring radii for ancient and medieval settlements in the Near East. From: Wilkinson 1989.

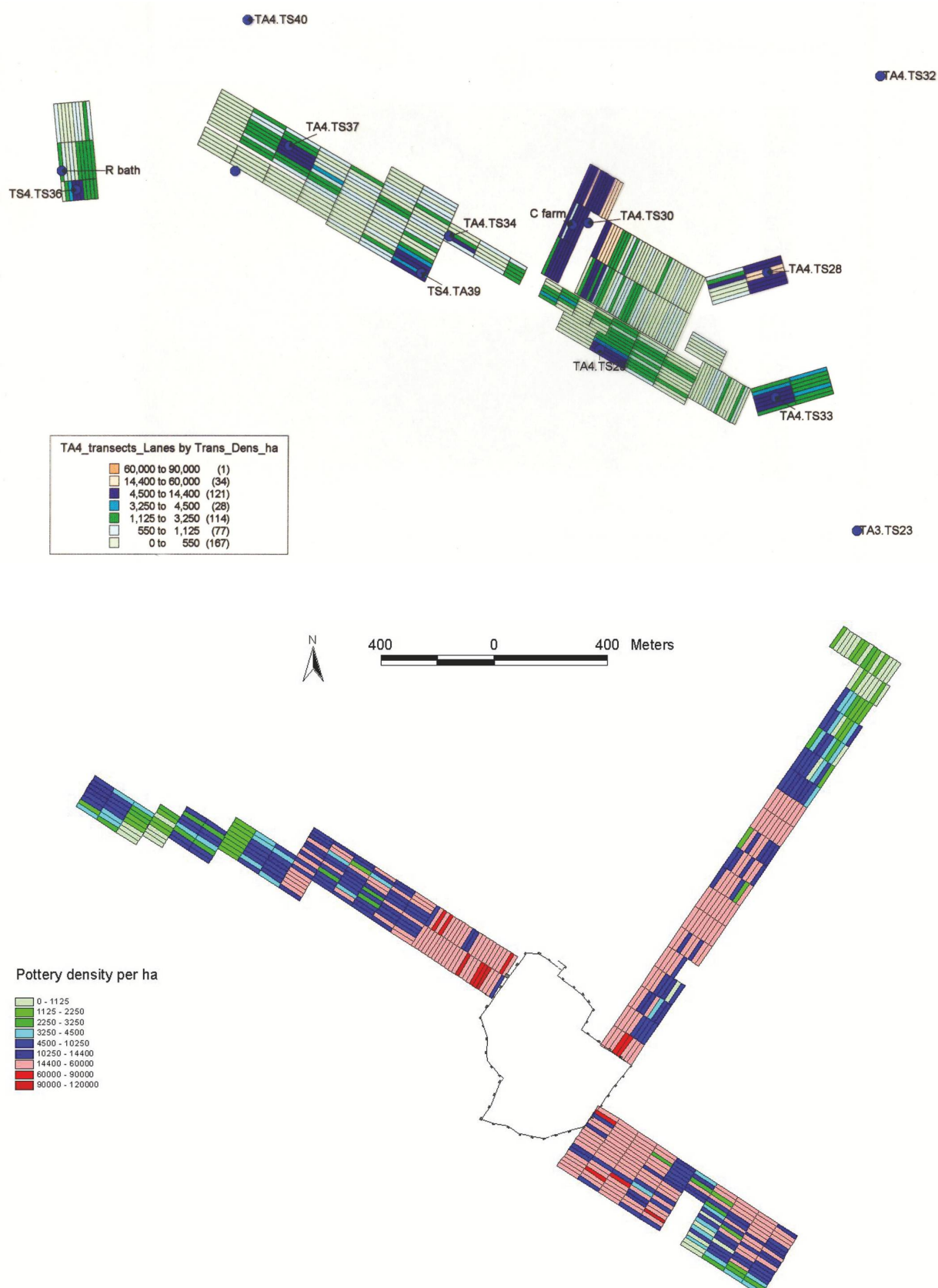


Fig. 4B: Site haloes in the outer countryside of ancient Tanagra City (Boeotia). From: Bintliff 2006. C: Urban manuring halo in the inner countryside of Tanagra City. From: Bintliff 2006.

in quantity and size from 1400-1570, but did not yet achieve a level of population density and land use intensity in any way comparable to that of Classical Greek towns and villages. In contrast, the small number of older Greek refuge villages, already much larger than the Albanian colonies from 1400, had achieved by 1570 a size and land use intensity at the same level as the Classical settlements preceding them in the same settlement chambers. At the settlement chamber level, these two divergent trajectories produce two settlement systems, one safely below carrying capacity, the other at a dangerous level of exploitation.

In this way, Landscape Archaeology is reaching the stage when we can write the 'cultural biography' of the site (Bintliff and Howard 1999), whether farm or great city, able to support or challenge historical evidence, but also providing essential complementary insights.

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EXPECTING THE UNEXPECTED: SZÁZHALOMBATTA-FÖLDVÁR SURPRISES ONCE AGAIN

Magdolna Vicze

Abstract: The paper presented here introduces some of the surprising results obtained from the ongoing excavations at the Százhalombatta Bronze Age tell. Százhalombatta, located just south of Budapest, is but one of the 14 or so fortified tell sites situated along the western high bank of the Danube. The excavation yielded new data on the termination period of the Bronze Age tells (2000-1400 BC) in Hungary and on some questions concerning households.

Keywords: Százhalombatta, Hungarian Bronze Age tell, Koszider period, Vátya culture, Nagyrév culture, household, settlement organization

Introduction

In Rome, in 1999, at the first official meeting of the 'Emerging Communities' team, some fifteen people who hardly knew each other sat around a table in the Swedish Institute. To start the meeting one of the participants stood up and said: "as I look around I can see that none of us really know why we are here but we all came because Kristian Kristiansen called us, and because we all love and trust Kristian..." Thus began the three archaeological projects in Sicily, Sweden and Hungary (Earle & Kristiansen 2010). That meeting launched not just unique cooperation between archaeological projects, but somewhere along the line lasting friendships evolved as well. One such close friendship arose between Marie-Louise Stig Sørensen, Joanna Sofaer and myself. The three of us are presently¹ leading the excavation of the Bronze Age tell settlement at Százhalombatta, i.e. the SAX Project.²

The Százhalombatta project

It is not the first, but now the second time during the last thirteen years of our excavation at the Middle Bronze Age tell settlement at Százhalombatta (Fig. 1) that our results seem to significantly impact and challenge established perceptions about the Hungarian Middle Bronze Age. In addition, it is remarkable that this can be claimed after unearthing only a little more than 2 metres, or barely half of the cultural layers of the settlement, the thickness of which is expected to be around 5 metres according to pre-excavation coring (see Varga 2000).

The first surprise provided by the site pertained to our understanding of the so-called Koszider phase (1500-1400 BC). In 1999, when we started the excavation of this tell settlement with Ildikó Poroszlai, one of our main areas of interest was exactly the Koszider-phase, since back then it was generally thought that it was nothing more but the name for the abandonment period of tell settlements all over the Carpathian Basin. It was commonly

held that this specific form of settled life lasting for a thousand or so years (and represented by the tell sites) was suddenly, and most probably forcefully, terminated. On the other hand, opinions widely differed and diverged as to the exact causes of, or the processes leading up to, this termination (see Mozsolics 1957; Bóna 1958; Kovács 1975). Nevertheless, the consensus that came to be accepted was that the Koszider phase/horizon/episode, irrespective of how we define it, had to be a relatively short and turbulent period that produced a large number of bronze hoards, the destruction and abandonment of the majority of the previously large central settlements and the cessation of the tell-building tradition. What followed was the occupation of the Carpathian Basin by a population represented by the so-called Tumulus-grave culture, which concurrently also signalled the beginning of the Late Bronze Age in Hungary (Bóna 1992b: 32).

The fact that this paradigm could remain entrenched for 50 years or so in Hungarian research was due to the lack of systematic and complex settlement investigations. Furthermore, there was only a relatively minimal amount of comparative material available from cemeteries, a situation that was exacerbated by the fact that large excavated cemeteries that could have shed clear light on the problem remained unpublished. For example: Tiszafüred-Majoroshalom is still not fully published (Kovács 1975a); and Dunaújváros-Duna-dűlő was only published in 2011 (Vicze 2011).

From the outset, with its exceptionally large excavation area, the Százhalombatta Project held the potential for supplying evidence that might aid in the complete re-evaluation of this period. Previously settlement sites with Koszider layers had limited excavated areas with small trench sizes (see for example: IPH I 1988; Bóna 1992; and further references in those publications). The 20 m x 20 m trench is not just physically several times larger than anything that has been excavated before by a research team in Hungary, but has the potential to produce in-depth information on a scale previously unavailable from the Carpathian Basin.

The initial result of the early seasons of work was, however, more of a confirmation than a real surprise. Instead of a thin Koszider occupation layer, we had uncovered a more than two metre thick cultural layer comprising several - five or six - occupation levels, all belonging to the Koszider phase. Moreover, there was no destruction level representing the termination of life on the tell. Instead, we had confirmation of what had by now become apparent

¹ Our dear friend, the late Ildikó Poroszlai, and the author of the present article directed the excavation at the beginning. After Ildikó's sudden and untimely departure, M-L Sørensen and J Sofaer kindly joined forces with me and share all the burden and reward such an enterprise has to offer.

² For more detail about the project - its aims, goals and some of its recent results - see Kristiansen 2000; Poroszlai & Vicze 2004a; Vicze 2000, 2004, 2005, 2013; Sofaer 2006, 2011; Sofaer et al. 2010; Earle & Kristiansen 2010; Sørensen et al. 2010; Sørensen & Vicze 2013.

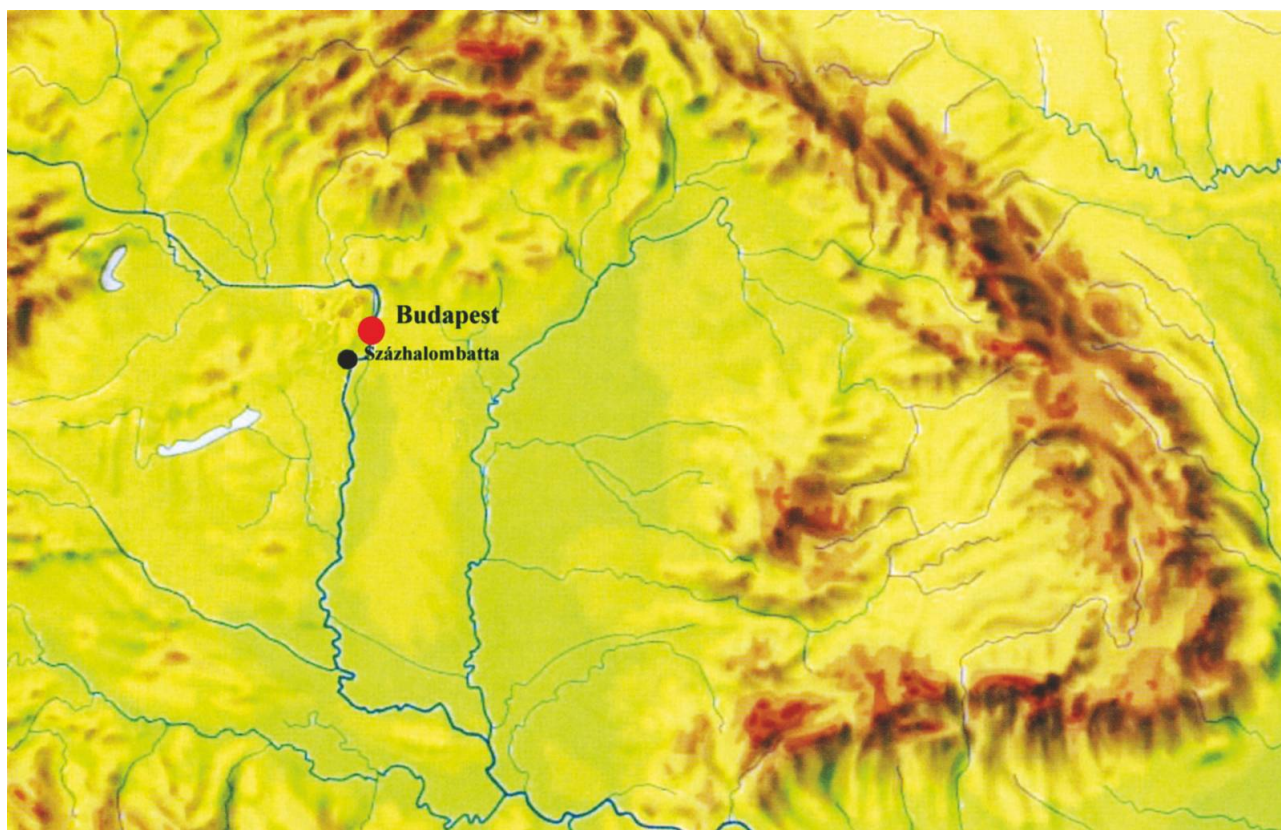


Fig. 1 The location of Százhalombatta.

from the analysis of the biggest coeval cemetery, Dunaújváros-Duna-dűlő. This had already shown that several chronological phases could be identified within the so-called Koszider phase that could be differentiated and verified based on the ceramic assemblages of hundreds of burials (Vicze 2011). Thus, like the cemetery material, the tell site also forced us to re-think our understanding of the Koszider phase and accept a much longer life-span for it. In addition, it obliged us to conclude that it is in effect the last, albeit long and flourishing, period of the tell-building tradition and as such is an integral part of the Middle Bronze Age period.

The Koszider occupation levels: more than rubble

Tell-building processes and accumulation of the archaeological remains are clear and well known to tell excavators. The continuous renewal or rebuilding of occupation levels and houses above previous occupation phases and house rubble is the basic course of generating tells. The Koszider phase houses and the related settlement organization followed this usual tell-building tradition. It was a wonder to unearth household after household from a period where – in this manner – it was not expected at all. Thanks to our systematic and exhaustive excavation methods, extensive new data shed light on several new aspects of household organization and space use. There were activity-specific arrangements of features, specialized food processing, storing, and other facilities could be identified (Vicze 2005, 2006, 2013; Poroszlai & Vicze 2004; Sørensen et al. 2010:138pp; Sørensen & Vicze 2013). Though individual variations could be discerned within households and their immediate surrounding space use, some regularity could still be recognized.

The direction of houses was in general NW-SE. The average size of houses stayed between 5-6 metres in width and 8-12 metres in length. The location of the so-called main street, on the west side of our trench, persisted over generations. Its orientation, NW-SE, concurs with that of the houses, but its width varies from 5 m to 8 m and in length runs through the whole 20 m of the trench. It is interesting to note that the axis of this main transit or the so-called 'main street' area regardless of its fluctuating width remained in the same place. This suggests stability in the overall layout of the entire settlement. The principal direction of the general occupation area, i.e. a cluster of houses, on the east side of the main street seems to be constant as well. This area is speckled with several smaller passageways, open areas, and alleys between houses. Within this confined insula-like occupation district, we occasionally observed periodical changes in given locations, when open or common areas alternated with house constructions (Poroszlai & Vicze 2005; Vicze 2006, 2007, 2010).

No matter how local space-use varied within the well-defined household district, one particular custom stands out house rubble treatment – and is chosen as a focus here. It is interesting to note, that the treatment of the house rubble covering the ground plan of the house was constant among the inhabitants of the settlement. Regardless of how or why a household was abandoned, the remaining rubble was always carefully contained and left on top of the house floor itself. In other words, house rubble never expanded more than 20 cm over the exact physical extension of the house itself. This can easily be explained/understood in cases where the wall of the neighbouring house was not farther than 60-80 cm away. However, house rubble belonging to a particular abandoned or rebuilt house was never found on the 4-8 m wide 'main street'



Fig. 2 Re-use of two ovens on the same spot. Photo: "Matrica" Museum Százhalombatta, Hungary.

either. Furthermore, there was no difference in the treatment between burnt or un-burnt structures, or larger and smaller house remains. To be able to appreciate the full significance of this practice it must be noted that burnt rubble layers in particular can sometimes be as thick as 30 cm. It seems probable to assume that the wattle and daub wall fragments were carefully collected from, or somehow prevented from falling on, common areas, and on the other hand were deliberately left (no sign of deliberate debris dumping was ever noted) immediately on top of house remnants. It is important to emphasize that this could be observed in association with all identified house remains on this site. This could only happen with the help of human intervention, thus one may propose that there was a purposeful, conscious and most probably orderly rubble/debris treatment at the site. The reason or explanation for such activity must be manifold, but for the sake of this paper, two are discussed here. The first is rather a practical argument, according to which this 'orderly' notion rose from social conventions (tradition-based expectations from the community) abiding a central, overall custom and/or management of the settlement as a whole. The other, rather a symbolic explanation, is a possible conjecture that we might consider (or think about) that the debris was removed from common areas only, in order for the 'body' of the collapsed house to remain intact or even be accentuated by the rubble. It might give the impression that both the visual and physical remnants or 'reminders' of the previous house and through that, that of the earlier generation

were important. Moreover, continuity or the continuation of the locale (by locale at this point meaning the exact area of the original household) must have been emblematic for the residents. An excellent example for the importance of continuity can be seen in Fig. 2. Here the hearth complex of the previous household was enlarged and re-erected on the exact same spot, and was made to be part of the new house construction in a way that left the debris of the house below otherwise intact. In other words, this act inevitably suggests a link and continuity between the two succeeding households. To pursue the true nature of this link would take us far from the aim of the present paper. However, such examples from the site open new avenues for discussions on several questions about the everyday life activities, space and social organization of the Bronze Age community living at Százhalombatta.

Change and the Vatya cultural complex

After being able to establish the valid place, importance, length and the settlement organization of the Koszider period, we became increasingly eager to examine the material of the earlier phase of the Middle Bronze Age. The more we knew about Koszider households and space organization the more interested we became in their predecessors. The best indication of a substantial chronological change on a tell site, lies within the change of the ceramic tradition. In the year 2012, there was finally a shift within



Fig. 3 The surface of the trench in 2012. Photo: “Matrica” Museum Százhalombatta, Hungary.

the ceramic material, and it became clear that our next occupation layer belonged to the earlier so-called classical phase of the Vátya cultural complex (around 1700 BC). Our anticipation was that the traditional tell building procedures – house remain on top of house remain – would be similar, as we are chronologically moving closer to the original tell builders (i.e. the Nagyrév culture 2000 BC) of the area (Bóna 1992).

It has already been mentioned that earlier research on Vátya tell sites was confined to small trenches. Reports of those excavations mention well-built clay floor remains (Bóna & Nováki 1982:36 pp; Bóna 1991:75; Bóna 1992a:149pp; Kovács 1963:131pp; Poroszlai 1992:141pp, 153pp; Vicze 1992:146pp etc.), suggesting well constructed Middle Bronze Age houses. We have data of distinctively built houses with several rooms (Bóna & Nováki 1982:35; Poroszlai 2000a:124). Even specialized households could be identified (Bándi & Petres 1969; Kovács 1994:47). Approximately 30 or more classical Vátya houses were known, described and some of them published from tell sites. None of the reports fails to mention the large number of pits present, a distinctive trait of the classical Vátya phase on tell sites (Mozsolics 1952:63-64; Bóna & Nováki 1982:65-66; Poroszlai 1988, 2000). However large the number of known Vátya houses seems, when we look more closely it becomes evident that in effect not a single household is known in detail. All excavation reports state that the observed house is not complete due to pits and/or the size of the excavation trench (see e.g.: Poroszlai 2000a:127; Bóna &

Nováki 1982:66; Vicze 1992:146). At the end of 1950s and 1960s a research team was created focusing on a detailed study of the fortified settlements of the Vátya culture with the aim to understand the inner settlement patterns and their relationship to their regional surroundings and each other (Bándi 1960: 149pp; Bándi-Petres 1969:170; Kovács 1969:168.). They conducted excavations on 6 or 8 tell sites, but even they failed to find and define a complete Vátya household. Consequently, our presumption was that the Vátya inner settlement organization and households are not known or recognized due to small trench sizes and the overwhelming number of pits in those trenches.

Being aware of the above-stated facts, we were self-assured (confident) that our relatively large excavation trench would yield all of the so far missing data on settlement organization, practices of space use and the true sizes and structures of the houses. To our great surprise, it became apparent in the 2012 season³ that the traditional practise of leaving and levelling house rubble, then erecting a new house on top, does not seem to have been followed in our newly found classical Vátya layer. The new level reached revealed that all remnants of the houses had been completely removed from the excavation area. Small parts or rather patches of yellow clayey house floors, walls in pits only and general mixed fill-material were uncovered in the

³ The following discussion is based on still unpublished data from our last fieldwork season.

entire trench with a sudden increase in the number of pits (Fig. 3). In spite of our efforts and careful digging, we could not connect these fragmentary house remains to any particular household. If not for the un-burnt in-situ floor and rubble remains found sunk into pits, we would have assumed that the whole space use of the settlement observed within the trench had suddenly been changed and was not part of the occupation area any more. It is important to note that house remains found in the pits appear to belong to different phases of the area, although they came into sight on the same horizontal level. In other words, we could with careful observation document that some of these houses, when in use, belonged to different households of different occupation phases. However, it is interesting to note that these house-fragments were found exactly under the same part of the trench, which in the phase above was part of the insula-like occupation area. There appears to be a significant difference in garbage management in this level of the site, where all moveable or visible house rubble has been removed, except for the parts sunk into pits, from the general surface, seemingly diminishing all remnants of households. Methods of house renewals and building foundations changed, resulting in an apparently different settlement structure. Only further excavation will shed light on whether we can expect a change in the perception of rubble treatment or that of living area and space-use organization.

Another new occurrence observed was the change of the composition of the material of floors. At this earlier level they contained much more sand and thus are substantially different from that of the rubble, floors and walls of the later levels. The difference is quite obvious even to the naked eye, and naturally micromorphological samples have been taken. Presently we are waiting for the outcome and are hoping that the results will verify and quantify the extent and nature of the differences. It is an interesting question whether this technological change is connected to the change in the site- and/or rubble management activity of the people. Is this observed technological change responsible for the structural change somehow?

The above stated question is but one of the numerous questions arising from these completely unexpected changes. Questions like: is this just an episode in the life of our settlement, or does it suggest a much more deeply-rooted change? Is it just a question of changes in garbage management? Alternatively, are these indicators of larger cultural and/or social change or a difference between the classical and the late Vatya household and settlement organization? The answers to these and many other unmentioned (indeed, yet un-thought of) questions await us in future seasons. Yet one incontrovertible conclusion can be drawn, which is in the case of Százhalombatta we have to be ready to expect the unexpected at all times!

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SEEDS FROM THE FIRE: CHARRED PLANT REMAINS FROM KRISTIAN KRISTIANSEN'S EXCAVATIONS IN SWEDEN, DENMARK, HUNGARY AND SICILY

Hans-Peter Stika and Andreas G. Heiss

Abstract: Archaeobotanical analyses accompanied several excavation campaigns in Kristian Kristiansen's international projects. The specific questions addressed in these analyses ranged from understanding past subsistence strategies in general to the spatial organisation of settlements and inside buildings, and, finally, also to issues of trade and of factors influencing crop choices. In early Bronze Age Thy, Denmark, naked barley and emmer were grown for household consumption only and not for surplus production. Manuring is indicated for the later phases. In early Bronze Age Tanum, naked barley and hulled wheat species were dominant, shifting to hulled barley in the late Bronze Age. At middle Bronze Age Százhalombatta, Hungary, the main crops were einkorn and hulled barley as well as lentil and pea. A wider spectrum of crops was available than at the Scandinavian sites, where meat was the main protein source. In Százhalombatta and on Monte Polizzo, Sicily, the human diet mainly consisted of vegetable food including legumes. Crops at early Iron Age Monte Polizzo, the most intensively studied site discussed in this paper, also seem to have been produced in over-abundance, and used for trade. At 'House 1' on Monte Polizzo, the different uses of rooms were reconstructed via the archaeological and botanical record, both highlighting activities such as ritual consumption, everyday life, crop processing and crop storage.

Keywords: agriculture, archaeobotany, Bronze Age, crops, Tanum, Thy, Százhalombatta, Iron Age, Italy, Monte Polizzo, subsistence

Introduction

The EOEC project ('The Emergence of European Communities')¹, initiated by Kristian Kristiansen and supported by the 'Improving the Human Research Potential' programme by the European Commission, aims at investigating the formation of early political communities in Europe between the second and first millennium BC, applying archaeology embedded in an interdisciplinary scientific network.

In each of the archaeological excavations of the project – Sweden (Tanum), Hungary (Százhalombatta) and Italy (Monte Polizzo, Sicily) – extensive archaeobotanical research on macrobotanical remains was carried out. These analyses were mainly funded by the Swedish Riksbankens Jubileumsfond and, in the case of Monte Polizzo, co-funded by Stanford University.² Archaeobotanical analysis in the associated excavation at Thy, Denmark, was funded by Northwestern University, Chicago.³

The mainly charred plant remains from the excavated features were primarily expected to result in information on the agriculture of the respective sites, such as the methods of field management and the processing of the crops and their use in daily nutrition. Spatial diversity in agricultural processing within the investigated sites was another goal of the work: for the Iron Age 'House 1' at Monte Polizzo, and for several middle Bronze Age houses at Százhalombatta, archaeobotanical sampling was carried out within a very dense grid in order to provide high-resolution spatial data within single houses. The third, but most difficult, question to answer was whether the identified crops had been cultivated for subsistence alone, or if they had been available in such quantities that surplus production was available for trading.

Methods

All archaeobotanical analyses discussed in this contribution essentially share a common methodology: charred plant remains were extracted from the surrounding sediments by flotation (basically an immersion of the soil samples in water, see Jacomet & Kreuz 1999). The floating light fraction was washed through a set of sieves with varying mesh sizes (Fig. 1), then dried and stored until analysis. Analysis in the laboratory followed standard methodology (see Stika 1996:18-20). For the imaging of seeds and fruits a stereo microscope (Wild Photomikroskop M 400) and a Canon Power Shot A 95 digital camera were used. SEM images were made using a Philips XL 20 scanning electron microscope after application of a gold/palladium sputter coating.

Parts of the archaeobotanical analyses' results presented in this article (Table 1) have previously been published or are soon to be published, such as the data from Salemi/Monte Polizzo (Stika et al. 2008), from Thy (Stika forthcoming) or from Százhalombatta (Stika and Heiss in press).

Case study 1: Thy (northern Denmark), early to late Bronze Age

In northern Danish Jutland, excavations in north-western Thy at the sites of Bjerre Enge and Legård uncovered early and late Bronze Age houses as well as remains of late Bronze Age field systems (e.g. Bech 1997; Bech et al. forthcoming). This coastal area had been inhabited from 1500 - 800 BC, and, according to vegetation reconstruction based on pollen analysis, the ancient seabed area where the settlements had been erected had been deforested somewhat earlier, during the Late Neolithic (Andersen 1995a, 1995b).

Plant macrofossil analyses (Henriksen & Harild 2002; Vretemark et al. 2010; Stika forthcoming) were carried out on samples taken

¹ See the online resources at <http://www.eoec.org/>

² Excavations directed by Ian Morris

³ Excavations directed by Timothy Earle



Fig. 1 The Sicily flotation machine in operation, based in the archaeological park of Selinunte near the sanctuary of Demeter Malophoros. Image: H.-P. Stika.

systematically from houses and surrounding areas, as well as from pits. The results (Table 1) show that throughout the Bronze Age the main cereal was naked six-rowed barley (*Hordeum vulgare* var. *nudum*). In the early Bronze Age emmer (*Triticum dicoccum*) was also a common crop whereas spelt (*Triticum spelta*) was grown on a smaller scale. In the late Bronze Age, the importance of the hulled wheats, emmer and spelt, decreased in favour of bread wheat (*Triticum aestivum*). A remarkable⁴ find in the late Bronze Age layers is the oilseed gold-of-pleasure (*Camelina sativa*).

The weed flora also shifts from a narrow spectrum in the earlier phase towards higher biodiversity in the later period, indicating a shift towards permanent fields and to manuring in the transition from the early Bronze Age to late Bronze Age – without fertilizing, the sandy soils would not have supported maintenance of permanent fields. Potsherds and charcoal found in the field areas are additional indicators of manuring as they point to the use of household refuse for fertilization (Stika forthcoming). Wood was a scarce resource in the deforested landscape: built structures consisting of low quality wood from degraded stands (poplar, *Populus* sp.) point towards a generally low availability (Malmros forthcoming). Fuel seems to have been based on other sources due to the same reason, such as on peat and dung. As indicated by the high numbers of cattle bones discovered in Thy (Vretemark et al.

⁴ Oilseeds in general have a very low chance for preservation in charred state due to their high content of fatty oils: when exposed to high temperatures during charring, the highly inflammable oil vapours usually lead to the rupture of the seeds, and to their complete combustion, leaving no analysable traces for the archaeobotanist.

2010) local access to dung must have been rather easy because of extensive livestock breeding, the dung serving both for manuring and as fuel.

Case study 2: Tanum (Bohuslän, south-western Sweden), Bronze Age

Excavations in the coastal region of Bohuslän mainly focused on rock art sites such as Tossene. Archaeological features were uncovered for roughly the same time range (early Bronze Age to early Iron Age) as is commonly attributed to the local rock art, as far as these can be dated (Ling 2009). Arable land is very limited in the region today (Bertilsson 1987), and it was obviously even more so in the Bronze Age, when shorelines lay at the very least 10 m higher than today (Miller & Robertsson 1988; Påsse 2003; Berntsson 2005).

The results of archaeobotanical research in Tanum (Table 1), together with a review of the region (Gustafsson 1998), suggest that in the early Bronze Age, agriculture in central and southern Sweden was mainly based on emmer, spelt, einkorn (*T. monococcum*) and naked barley (*Hordeum vulgare* var. *nudum*), while hulled barley (*H. vulgare* var. *vulgare*) and naked wheat were only of minor importance. During this period, broomcorn millet (*Panicum miliaceum*) and gold-of-pleasure were introduced to the region. Towards the late Bronze Age, the importance of naked barley and hulled wheats decreased while hulled barley became the main cereal crop (Gustafsson 1998). Flax (*Linum usitatissimum*) was introduced to the area in the late Bronze Age. Like in the Danish sites, these data are interpreted as deriving from the shift from non-permanent fields in the early Bronze Age to permanent fields in the late Bronze Age, maintained by systematic manuring (Gustafsson 1998). The change in house architecture – the switch from two-aisled houses to three-aisled houses – resulted in easier availability of manure necessary for this, as this type of house, with an integrated stable, allowed the indoor breeding of animals (Bech et al. forthcoming). Gathering of dung was also possible at outdoor fold yards, which were interpreted from the excavated structures there. Also the switch from naked barley and hulled wheats towards hulled barley seems to have been fostered by manuring: the latter cereal responds more rapidly to increased nutrient contents in the soil (Viklund 1998).

Case study 3: Százhalombatta (Hungary), middle Bronze Age

Plant remains from the tell settlement of Százhalombatta-Földvár (2000-1400 BC) were analysed with the main target of spatial organization of domestic structures by systematically sampling both inside houses and their surroundings. The localization of the various agricultural activities was of particular interest, such as harvesting, threshing, winnowing or grinding (e.g. Hillman 1984). The project is, however, still in a preliminary stage (Berzsényi et al. 2010).

The available archaeobotanical record, mainly based on middle Bronze Age pits (Table 1), suggests that hulled barley (*Hordeum vulgare* var. *vulgare*) and einkorn were cultivated as the main cereals in Százhalombatta. Additionally finds of ‘new type’ hulled wheat (*Triticum* cf. *timopheevi*), emmer and spelt as well as the free-threshing bread wheat, naked barley, millet and rye (*Secale cereale*), indicate that a wide range of cereals grew in the local fields. The main pulses were lentil (*Lens culinaris*) and pea (*Pisum sativum*), while bitter vetch (*Vicia ervilia*) and field bean (*V. faba*) were rarely grown in Százhalombatta. Seed finds of the oil plants

Table 1 Total sums of useful plants identified in the sites discussed in the text. If not mentioned otherwise, the numbers refer to finds of seeds and fruits. BA: Bronze Age, EBA: early Bronze Age, MBA: middle Bronze Age, LBA: late Bronze Age, IA: Iron Age, EIA: early Iron Age.

Site	Thy 3414 Legård		Tanum, Tossene (Raä)	Százhalombatta- Földvár			Salemi		
	EBA	LBA	BA/IA	MBA	LBA	EIA	Monte Polizzo 7th-6th c. BC	Old Town 5th-4th c. BC	
Number of analysed samples	8	11	27	89	2	8	255	13	
Cereal grains	37	763	58	7197	190	580	1025	25	Cereal grains
<i>Avena</i> sp.	–	12	12	1	–	1	12	–	oat species (weedy form?)
<i>Hordeum vulgare</i>	15	104	14	671	10	10	178	2	barley
<i>Hordeum vulgare</i> var. <i>vulgare</i>	1	13	7	1227	4	40	5	–	hulled barley
<i>Hordeum vulgare</i> var. <i>nudum</i>	7	51	–	16	–	–	–	–	naked barley
<i>Panicum miliaceum</i>	–	5	–	57	70	8	–	–	broomcorn millet
<i>Secale cereale</i>	–	–	–	5	–	–	–	–	rye (weedy form?)
<i>Triticum aestivum</i> / <i>T. durum</i>	–	11	2	30	–	7	86	4	bread/durum wheat
<i>Triticum dicoccum</i>	4	252	1	149	1	17	70	–	emmer
<i>Triticum monococcum</i>	–	1	–	2222	41	215	2	–	einkorn
<i>Triticum spelta</i>	–	6	–	70	6	7	–	–	spelt
<i>Triticum</i> sp. ‘hulled wheat’	–	41	–	163	–	31	80	–	hulled wheat
<i>Triticum</i> sp.	–	28	–	435	6	54	17	–	wheat species
<i>Cerealia</i> , Indet.	10	239	22	2151	52	190	575	19	cereals, unidentified
Cereal chaff	2	100	3	8706	644	110	126	–	Cereal chaff
<i>Hordeum vulgare</i> var. <i>vulgare</i>	–	1	–	–	–	–	–	–	hulled barley
<i>Hordeum vulgare</i> var. <i>nudum</i>	–	2	–	–	–	–	–	–	naked barley
<i>Hordeum vulgare</i>	–	9	–	133	3	1	4	–	barley
<i>Triticum aestivum</i> / <i>T. durum</i>	–	–	–	–	–	–	7	–	bread/durum wheat
<i>Triticum</i> cf. <i>dicoccum</i>	2	76	–	51	–	3	51	–	emmer
<i>Triticum</i> cf. <i>monococcum</i>	–	–	–	1571	92	25	5	–	einkorn
<i>Triticum</i> ‘new type’	–	–	–	249	32	8	–	–	hulled wheat ‘new type’
<i>Triticum</i> cf. <i>spelta</i>	–	–	–	71	130	6	–	–	spelt
<i>Triticum monococcum</i> / <i>dicoccum</i> /new type	–	–	–	6467	375	62	–	–	einkorn/emmer/new type
<i>Triticum</i> sp. ‘hulled wheat’	–	10	–	64	4	–	43	–	hulled wheat species
<i>Cerealia</i> , Indet.	–	2	3	100	8	5	16	–	cereals
Oil plants	–	–	2	16	–	–	13	4	Oil plants
<i>Camelina sativa</i>	–	–	1	11	–	–	–	–	gold-of-pleasure
<i>Carthamus tinctorius</i>	–	–	–	1	–	–	–	–	safflower
<i>Linum usitatissimum</i> , seeds	–	–	1	2	–	–	5	–	common flax
<i>Linum usitatissimum</i> , capsule fragments	–	–	–	–	–	–	7	–	common flax
<i>Olea europea</i> , stone fragments	–	–	–	–	–	–	–	4	olive
<i>Papaver somniferum</i>	–	–	–	2	–	–	1	–	opium poppy
Pulses/legumes	–	–	1	938	3	47	55	–	Pulses/legumes
<i>Lens culinaris</i>	–	–	–	278	1	19	–	–	lentil
<i>Pisum sativum</i>	–	–	–	137	–	5	–	–	garden pea
<i>Vicia ervilia</i>	–	–	–	38	–	4	–	–	bitter vetch
<i>Vicia faba</i>	–	–	–	5	–	–	48	–	broad bean
<i>Fabaceae</i> cult., Indet.	–	–	1	480	2	19	7	–	cultivated legumes
Cultivated fruit	–	–	–	–	–	–	46	13	Cultivated fruit
<i>Ficus carica</i>	–	–	–	–	–	–	32	7	fig

<i>Prunus dulcis</i>	–	–	–	–	–	–	1	–	almond
<i>Vitis vinifera</i>	–	–	–	–	–	–	13	6	grape vine
Condiments	–	–	–	–	–	–	3	–	Condiments
<i>Coriandrum sativum</i>	–	–	–	–	–	–	2	–	coriander
<i>Pimpinella anisum</i>	–	–	–	–	–	–	1	–	aniseed
Vegetable/salad plants (wild or cultivated)	–	–	–	149	–	1	1	–	Vegetable/salad plants
<i>Beta vulgaris</i>	–	–	–	–	–	–	–	–	beetroot
<i>Portulaca oleracea</i>	–	–	–	124	–	1	–	–	little hogweed
<i>Valerianella dentata</i>	–	–	–	25	–	–	1	–	narrowfruit cornsalad
Gathered wild fruit	–	1	11	41	–	2	9	–	Gathered wild fruit
<i>Cornus mas</i>	–	–	–	21	–	2	–	–	cornelian cherry
<i>Corylus avellana</i>	–	1	10	–	–	–	–	–	hazelnut
<i>Fragaria vesca</i>	–	–	–	4	–	–	–	–	woodland strawberry
<i>Juniperus communis</i>	–	–	1	–	–	–	–	–	juniper
<i>Malus sylvestris</i> / <i>M. domestica</i>	–	–	–	1	–	–	–	–	crab apple/apple
<i>Prunus spinosa</i>	–	–	–	1	–	–	9	–	sloe
<i>Rubus</i> sp.	–	–	–	1	–	–	–	–	brambles species
<i>Sambucus ebulus</i>	–	–	–	10	–	–	–	–	dwarf elderberry
<i>Sambucus nigra</i>	–	–	–	3	–	–	–	–	black elderberry

gold-of-pleasure, linseed/flax, opium poppy (*Papaver somniferum*) and safflower (*Carthamus tinctorius*) indicate their cultivation. Data on spatial variability in plant remains distribution is already available in house 3147 (Berzsényi et al. 2010): these indicate that some stages of crop cleaning (possibly winnowing, hand-sorting and grinding) were indeed carried out inside the house. Close to the hearths, however, only final products (the cleaned cereal grains) were taken to the areas of the hearths and baking ovens for further food preparation as nearly no archaeobotanical remains were found there. Future research will allow more detailed conclusions.

Case study 4: Monte Polizzo (Sicily), Early Iron Age

Geographical and political environment

During the early Iron Age, Sicily was inhabited by several ethnic groups: indigenous Sicilian settlements as well as Punic and Greek colonies were situated close to each other (Fig. 2), and they interacted in complex ways affecting political, cultural and economic life as documented in numerous reports based on the archaeological and historical record (cf. Leighton 1999; De Angelis 2006). Replacing the once popular idea of the indigenous people ‘colonized’ by the Greeks, fostered by numerous Greek finds in the indigenous Elymian settlements from the seventh/sixth century B.C. (Leighton 1999:220, 232), the alternative term of ‘transculturation’ has been suggested (Streiffert Eikeland 2006:17-26), which more directly points out the mutual character of these interactions.

Some questions regarding agricultural similarities or differences between the ethnic groups have already been raised by ancient Greek sources: the high quality of Selinountine wheat was praised by Theophrastus, and the cereal ears depicted on Selinountine tetradrachms from the fifth century B.C. may illustrate their economic importance for the region (cited in De Angelis

2003:186). In contrast to themselves, the ‘civilized’ Greeks deprecatingly called the indigenous peoples *elymoi* – ‘millet eaters’ (cited in De Angelis 2006:31). These *topoi*, as documented by historic and epigraphic/numismatic sources, have now been tested against scientific data from bioarchaeology.

Archaeobotanical research

At the Elymian Iron Age site on top of the mountain Monte Polizzo (prov. Trapani, commune di Salemi, western Sicily) archaeobotanical investigations were carried out on a large scale (Stika 2005; Stika et al. 2008). In this area, spatial distances between the different ethnic groups were indeed small: from this Elymian settlement, the Greek harbour town of Selinunte (Selinous) in the south, as well as the Phoenician/Punic colony of Motya in the west, were in sight, as was the next Elymian town, Segesta, to the north.

General results on agriculture and subsistence on Monte Polizzo

Find densities (Table 1) were very low in general, and importance of cultivated crops is mainly illustrated by their frequency of appearance in the samples. Three main cereals were found: hulled multi-rowed barley, emmer, and free-threshing wheat (*Triticum aestivum* / *T. durum*). Only a few remains of einkorn, another hulled wheat, were found. Finds of oat (*Avena* sp.) supposedly derive from one of the wild oat species. Another important crop for alimentation was the faba bean/field bean; so far, other pulses are absent from Monte Polizzo. The oilseeds linseed/flax and opium poppy are also documented in the find record, as are the following fruits and nuts: fig (*Ficus carica*), grapevine (*Vitis vinifera*) and almond (*Prunus dulcis*). While coriander (*Coriandrum sativum*), which was also found, is a typical horticultural plant, the narrow-fruited corn salad (*Valerianella dentata*) might just have been gathered in the wild.

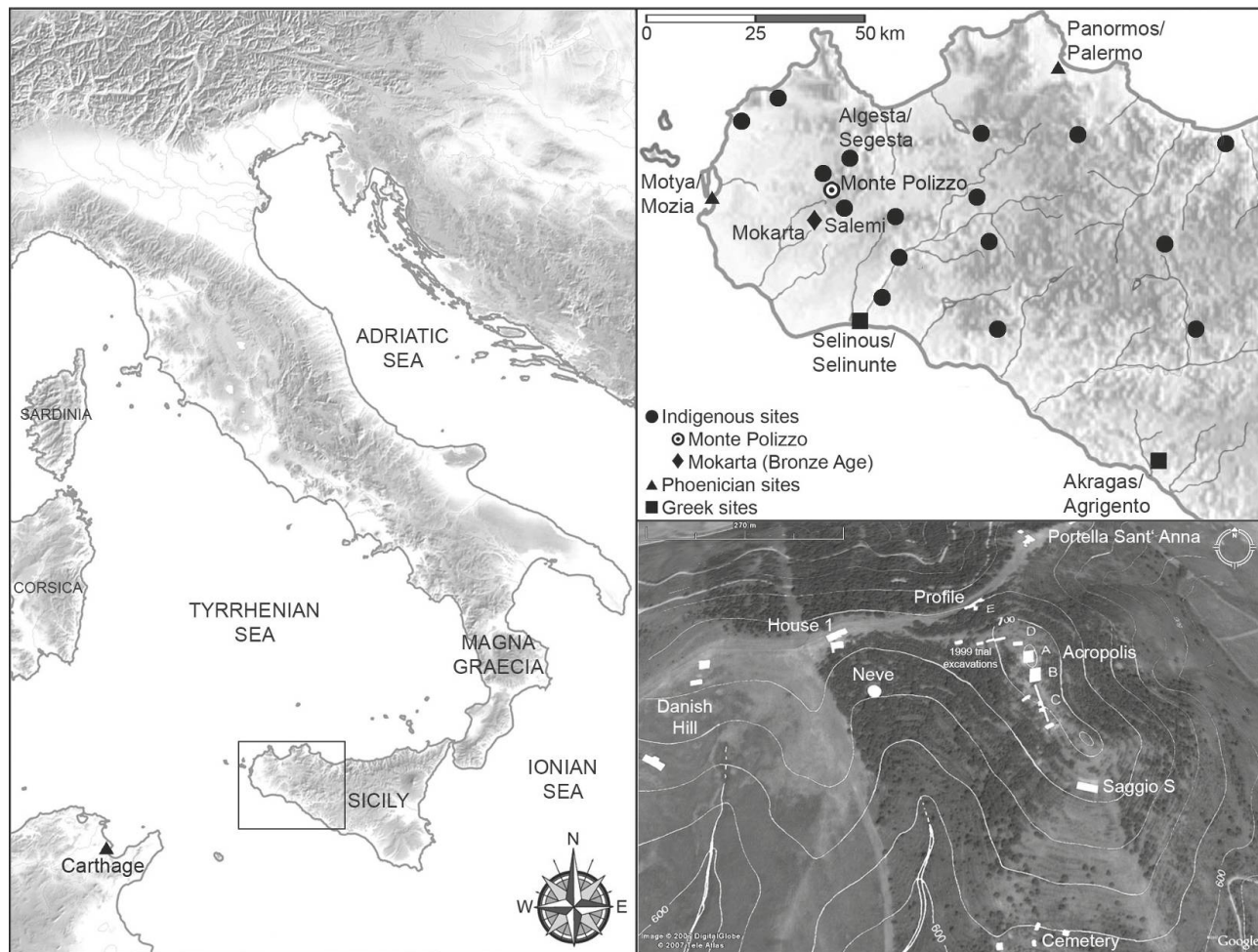


Fig. 2 Important settlements of the early Iron Age in Sicily (Morris et al. 2004:247). Map source: LaFleur et al. (2001), modified. Bottom right: Aerial photograph of Monte Polizzo, with the excavation areas indicated (Morris et al. 2004:248). Map source: Google (2007), modified.

Crop processing must have taken place within the settlement, as indicated by the frequent occurrence of cereal chaff, *Linum* capsule fragments and weeds. The type of weeds and the ratio between chaff, weeds and grains indicate different stages of crop processing and storage. Capsule fragments of linseed/flax show that this crop was processed for the use of seeds and/or the use of its fibres.

A spatially diversified household: 'House 1'

Seeds and fruits

The find densities in the analysed sediments from House 1 were very low (an average of 0.7 finds per litre). At a total, 235 charred plant finds (without charcoal) appeared in 84 samples. No obvious concentrations of carbonized grains were encountered, and some samples did not contain any identifiable charred material. Nevertheless, the results are of high interest in regard to the reconstruction of daily activity.

The charred remains of cereal grains and fruits in House 1 might be interpreted as vestiges of cooking activities and especially in the case of the fruit remains they might have derived from consumption. Concerning chaff and weeds, the spectrum of archaeobotanical finds points to crop processing activities (cf.

Hillman 1984; Jones 1984, 1987). The nutrition-demanding weeds indicate that the crops must have been cultivated on good quality soils. As a regional survey of the fertile arable land around Monte Polizzo displayed (Kolb 2004), hints of agrarian settlements in the close vicinity from early Iron Age are very scarce. Most probably due to uncertain times the peasants may have cultivated their fields while living in the town on Monte Polizzo. As the botanical finds from other parts of the Elymian settlement on Monte Polizzo have shown— especially from the huge midden layer on the northern slope – the processing of cereals and linseed took place inside the ancient town.

The interpretation of the excavated walls of House 1 is controversial (Streiffert Eikeland 2006; Sørensen 2010). Following the reconstructions of the excavators (Mühlenbock & Prescott 2004a, b), their interpretations (Sørensen 2010) concerning function and use of the different rooms match up very well with the archaeobotanical interpretations. The high quality archaeological finds from House 1 (see Mühlenbock & Prescott 2004a) suggest a household of high social rank. Archaeobotanical finds of fig and grapevine may be scarce in the c. 500 samples from all trenches of the Monte Polizzo excavations. But, within the very few botanical finds from House 1, they are overrepresented. Special use of fig and grape vine during symposiums might be the reason for that. At its end, House 1 partly burnt down. The

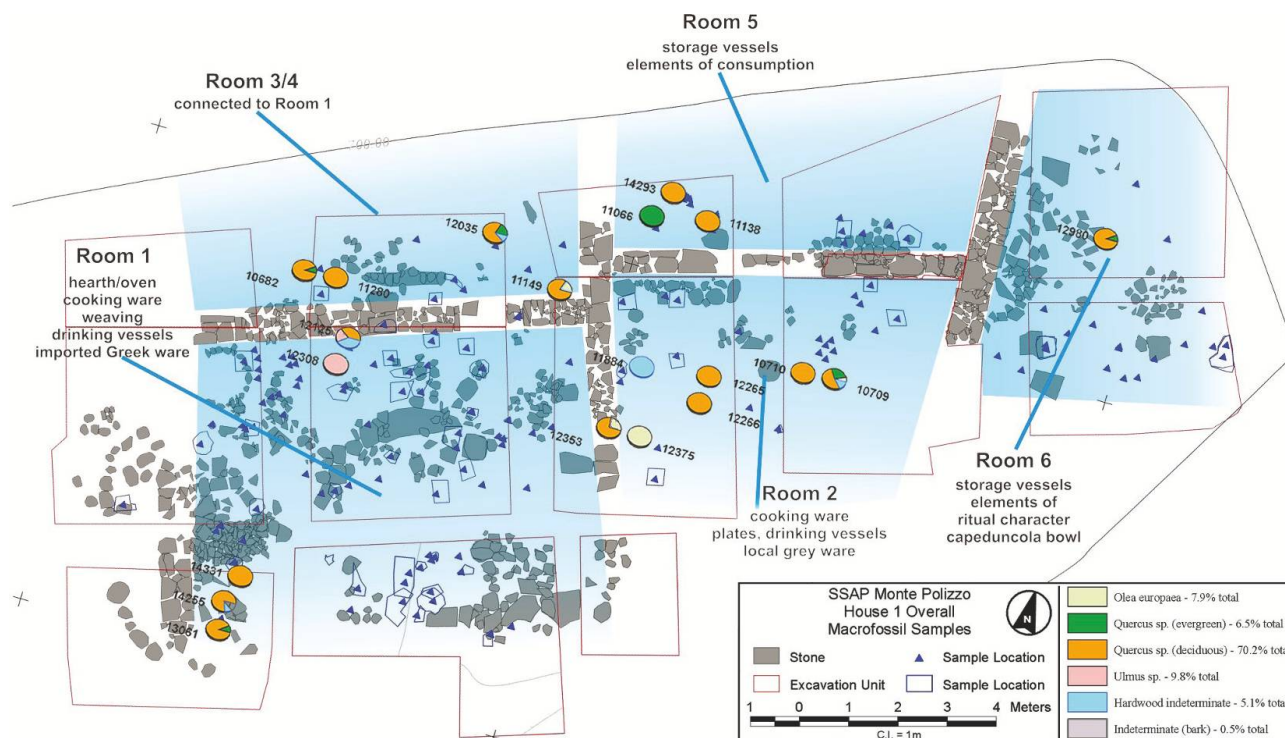


Fig. 3 Floor plan of House 1, Monte Polizzo. Shaded areas indicate the reconstructed rooms. Triangles indicate the positions of soil samples for macrofossil analysis, pie charts display the proportions of the analysed charcoal assemblages. Map source: Intrasis database of the EEC-EU project, modified.

few archaeobotanical residues of seeds, fruits, cereal grains and cereals chaff might indicate frequent and thorough cleaning of the floors when the house was still in use. The few charred botanical finds might be exactly those residues which were lying on the floor when the destructive fire took place. So, we might have a snapshot of activities from the very last period of House 1.

Localizing the residues of fig and grapevine in a map of the foundation walls of House 1 (Fig. 3) indicates that these finds were located in room 1 and room 6, archaeologically being interpreted as places with ritual consumption, most probably following a Greek symposium as high-quality imported Greek-ware might suggest. Only one pip of grapevine was found in room 2 which is interpreted as a room of less prominent social consumption, where local grey-ware was used. Faba bean was found in room 1 at a hearth/oven where food preparation was undertaken. A charred sloe fruit (*Prunus spinosa*) and one seed of pulses appeared in room 5 together with finds of storage vessels. These crops were probably stored there together with cereals as there are some scattered grain finds from there, too (Fig. 4). Weed seeds are widespread in the rooms 1, 2 and 3-4, while they are scarce in rooms 5 and 6. Cereal chaff is found in rooms 1, 2, and 3-4 while chaff finds are missing in rooms 5 and 6. Both compartments are classified as storage rooms indicated by the huge vessels which were found there. The crop processing has taken place in a different area (rooms 1, 2, 3-4) than where the storage was located (rooms 5 and 6).

The charcoal evidence

The number of woody taxa identified in the charcoal material was unexpectedly very limited. The major part (both by fragment numbers and by fragment weight) consisted of oak wood

(*Quercus* sp.). In the material, the evergreen oak taxa were clearly distinguishable from the deciduous species: deciduous oaks have conspicuously ring-porous (sometimes half-ring-porous) wood with very large earlywood vessels and small latewood vessels, corresponding with their phenological periodicity (i.e. shedding their leaves at a certain time of the year). Evergreen oak wood is diffuse-porous (rarely half-ring-porous) with constantly small vessels, and usually does not display any growth ring boundaries (Fig. 5; see also e.g. Schweingruber 1990). A minor part of the House 1 charcoal (7% of the fragments; 26.1% of total charcoal weight) derived from olive tree (*Olea europaea*), the third woody plant genus identified in the House 1 charcoal was elm (*Ulmus* sp.; 9.8% of the fragments, 22.5% of total charcoal weight). However, the different elm species cannot be differentiated from each other via their wood anatomy.

As documented in Stika et al. (2008), the charcoal samples from Monte Polizzo excavation trenches Saggio S and Loci A, C, and E had originated from carbonized roof beams. This archaeological interpretation went together well with archaeobotanical analysis, as the material's dendrological features pointed to the utilization of trunks or thick branches. For House 1, we now observed a similar species composition with similar dendrological properties. The conclusion is therefore near at hand that a major part of the House 1 charcoal also derived from construction wood.

Conclusions on the former environmental situation of Monte Polizzo inferred from charcoal analysis are still rather limited due to the small spectrum of taxa identified. What seems almost certain is that natural mixed forest stands (documented by elm and by deciduous and evergreen oaks) were widely available at the time, and that no major degradation of local vegetation had taken place yet. The absence of pine (*Pinus*) species in the

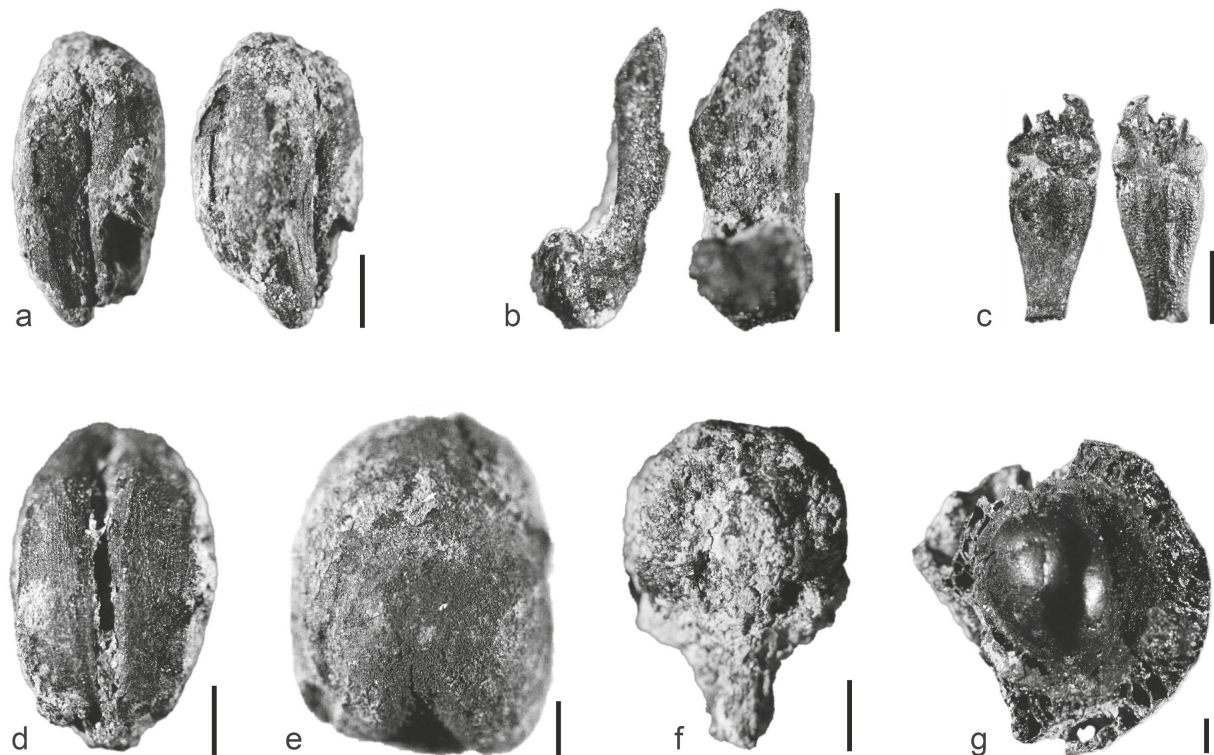


Fig. 4 Charred seeds/fruits from the Monte Polizzo excavations. a, b emmer wheat (*Triticum dicoccum*) grain and glume base, c naked wheat (*Triticum aestivum/durum*) grain, d hulled barley (*Hordeum vulgare*) grain, e field bean (*Vicia faba*) seed, f grapevine (*Vitis vinifera*) seed, g sloe (*Prunus spinosa*) endocarp. Images: H.-P. Stika

charcoal record may point to the same fact. The reasons for the strong representation of olive tree in the (supposed) construction wood still remains unclear, especially when taking into account the fact that not a single fragment of olive stones has been found on Monte Polizzo so far. Interpretation of these results would be mostly speculative at the current time, such as local Elymians not using olives (thus completely questioning *Olea* cultivation on Monte Polizzo, and interpreting any stands as natural), or exporting the whole and unprocessed crops to other settlements. Future investigations may bring more clarity on that matter.

Conclusions on Elymian subsistence and trade

Interpretation of the archaeobotanical results from Monte Polizzo is facilitated by comparing the data to the results from the contemporary Greek town of Selinunte (Selinous), situated at the southern coast of western Sicily (c. 35 km to the south of Monte Polizzo). In this Greek settlement, free-threshing wheat was the dominant cereal, while hulled barley was common but less important – emmer wheat was far from any importance (Stika et al. 2008).

As the rural hinterland of Selinunte seems to have been dominated by widespread undisturbed climax vegetation during the Bronze Age (suggested by a pollen profile from Gorgo Basso, located close to Selinunte; Tinner et al. 2009), cereals do not seem to have been produced in this region on a large scale during early Iron Age. In addition, even today the soils around Selinunte are not as fertile as those in the Monte Polizzo area (De Angelis 2003, 180–183): concerning fertility, the cultivation of free-threshing wheat is

much more demanding than growing emmer and barley. Thus, the surroundings of Monte Polizzo are much more suitable for local production of free-threshing wheats than the Selinountine region. The Greek town of Selinunte might have imported free-threshing wheats from the indigenous Elymians, who might have based their own nutrition on barley and emmer. Thus, pointing to the initial question on the validity of written records, the Greek should have called these people *krithophagoi* (barley eaters) instead of *elymoi* (millet eaters).

Cultural distinctions in the use of pulses can also be discussed. The pulses lentil and bitter vetch are listed for Selinunte, but the faba bean is missing there. So while the Greeks used lentil and bitter vetch, Elymians preferred faba bean, as the archaeobotanical finds from the two sites suggest. Another cultural difference can be seen in the use of oil and fat. While Selinunte provided plenty of finds of fruit stone fragments from olive, these types of finds were missing from Iron Age Monte Polizzo, whereas charcoal analyses detected the use of olive tree wood for timberwork there. Chemical analysis of an amphora from Monte Polizzo indicated that the vessel had contained animal fat (Agozzino 2005). These results might suggest a difference in the respective food systems: Greek olive oil versus Elymian animal fat as well as the use of different cereals and pulses.

As the charcoal analyses from the early Iron Age site of Monte Polizzo have shown, beams of deciduous and evergreen oak were used for roofing. Consequently, tall oak trees must have been available to the inhabitants of the ancient town on Monte Polizzo to be used as a construction timber. As up to now the charcoal

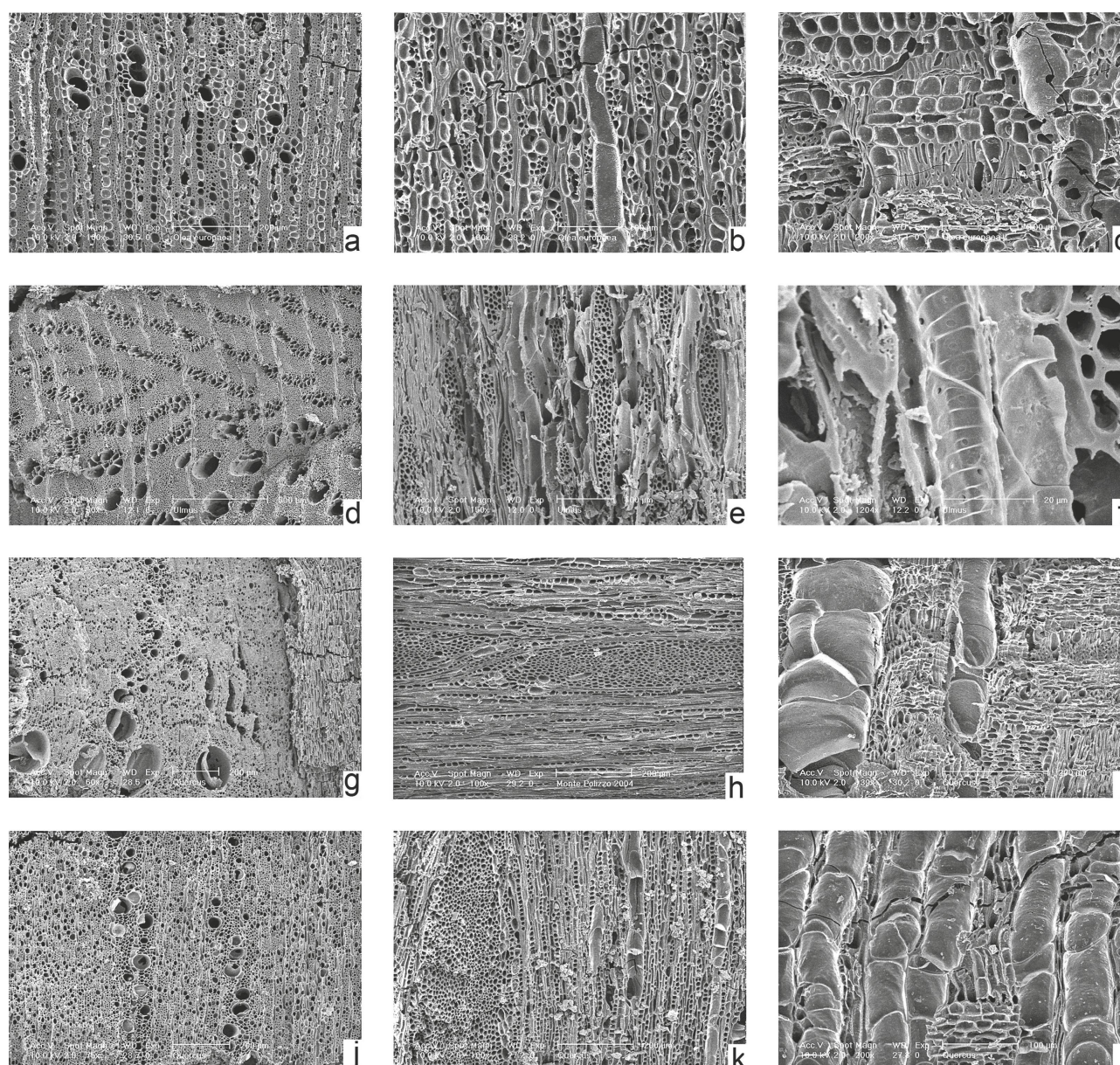


Fig. 5 SEM images of charcoal from the Monte Polizzo excavations. a-c olive (*Olea europaea*), d-f elm (*Ulmus* sp.), g-i deciduous oak (*Quercus* sp.), j-l evergreen oak (*Quercus* sp.). Left row (a, d, g, j): transversal view, middle row (b, e, h, k): tangential view, right row (c, f, i, l): radial view. Images: A. G. Heiss.

record has not provided any evidence on pioneer taxa (e.g. pine), a rather undisturbed climax vegetation at Iron Age Monte Polizzo can be assumed. The local deciduous oak species are restricted to higher elevations and surely must have derived from the mountain itself. The results of the pollen profile from Gorgo Basso (Tinner et al. 2009) support the assumption of widespread undisturbed climax vegetation in western Sicily during the Bronze Age.

General Conclusions

In both Scandinavian Bronze Age sites (Tanum in Sweden and Thy in Denmark), the spectrum of cultivated plants is quite narrow, compared to Bronze Age sites across central and southern Europe (Stika & Heiss forthcoming). Crop cultivation is mainly limited to barley, emmer and, in later periods, also bread wheat. Apart from cereals, other cultivated plants are markedly scarce. In the

transition from early to late Bronze Age, crop plant spectrum slightly diversifies probably due to fertilizing the fields with dung. In Sweden, the shift from naked to hulled barley takes place in the transition from early to late Bronze Age, while in northern Jutland this shift happened much later, around AD 100. In general, crop cultivation in this region seems to have been less important in comparison to herding, fishing and animal-based nutrition in general. The landscape in Thy seems to have been widely deforested, and wood as a resource for timber and fuel was hardly available.

At the Hungarian site of Százhalombatta, upon the floodplains of the river Danube, the landscape was completely different to that of the Scandinavian sites. Soil fertility was high in the upland for cultivating the main crops, einkorn and barley, as well as the pulses lentil and pea, as an important protein source when human

consumption consisted mainly of vegetable food. In addition, growing pulses contributes to soil fertility. The list of cultivated plants is long for the middle Bronze Age period, and the highly diversified species mix displays the availability of a wide range of crops coming from the Balkans and the Near East. The 'new type' glume wheat (probably Timopheev's wheat) and safflower are just two species which were found in Százhalombatta but never arrived in northern Europe.

In early Iron Age Sicily, at the site of Monte Polizzo, natural forests unexpectedly seem to have still existed at the beginning of the settlement phase. Agriculture on the fertile soils was conducted on a large scale and free-threshing wheat was produced to be exported to Greek Selinunte, while the Elymian inhabitants lived on barley and emmer. Pulses were probably the most important protein source – more important than meat – for the local population. Also, traces of the familiar Mediterranean fruit tree culture are already visible in the findings of Monte Polizzo. Differences in the spatial use of House 1 could be detected, and the archaeobotanical results corresponded well with archaeological interpretations.

While nutrition in the Scandinavian sites mostly depended on meat, the inhabitants at the Pannonian and Mediterranean sites seem to have based their diet mainly on plant resources.

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‘ZONE 4’ – BRONZE AGE SETTLEMENT IN THY, NORTH-WEST DENMARK: AN UPDATE ON AN OLD DISCUSSION ABOUT A BOOM AND POSSIBLE SUBSEQUENT CRISIS

Jens-Henrik Bech and Karen Margrethe Hornstrup

As far as the eye can extend, a sea of barrows rise like bubbles on a pot of boiling water. There is no doubt that this county of Thy has, of old, been the scene of many a bloody conflict, as well as long one of the richest and most thickly-populated parts of the kingdom.

(Marryat 1860:160f) (Fig. 1).

Abstract: Kristian Kristiansen's two major articles from 1978 about settlement, economic strategies and land-use in Bronze Age Denmark (1978a and b) form the starting point for this contribution. Even today, one generation later, it is relevant to return to these results and examine them in the light of later research. The present article examines Period III and Period IV of the Bronze Age in the area of Thy, north-western Denmark, including, aside from the well-known burial finds, a large number of 14C-dated Bronze Age houses. Viewed together the evidence confirms the thesis that Thy was densely settled in Period III of the Bronze Age. Period IV, however, does not appear to have been a period of decline, as presented by Kristiansen, but is characterized by innovation and a continued dense settlement. Not until the end of this period do we see signs of depression and a possible crisis in the following centuries.

Keywords: Thy, Crisis, burials, houses from Bronze Age Period III and Period IV

The Bronze Age settlement of Thy

Anyone who has followed Kristian Kristiansen's research over the years is aware that Thy occupies an important position in his archaeological universe. This interest goes back to the 1970s where in two major articles from 1978 (Kristiansen 1978a, 1978b) he demonstrated that the development of north-west Jutland through the middle part of the Bronze Age is distinct from the rest of the country. In north-west Jutland a boom developed in Period III to be followed by a crisis-like situation at the transition to Period IV. Even though Kristiansen later dealt with Thy, both in the context of the Thy Project and in later works (e.g. Kristiansen 1998; Earle and Kristiansen 2010) it is in the articles from 1978 that the key figure of this festschrift for the first time and, as the first Danish archaeologist, placed the subsistence strategy and land use of the Bronze Age in an environmental context. Therefore, as a tribute to Kristian Kristiansen, we have chosen the two articles of 1978 as our point of departure. At that time, if one wanted to discuss settlement questions, the main basis was graves for the simple reason that only a small number of settlements were known. The only way forward was to build on Sophus Müller's old thesis of a close relationship between grave finds (barrows) and settlement studies (Müller 1904). Indeed, this was the premise of almost all subsequent settlement studies (Mathiasen 1948:100 ff, Randsborg 1974:40; Kristiansen 1978a and b; Poulsen 1993). Both Kristian Kristiansen and Klavs Randsborg point out that only a selection of the population was buried, but after closer evaluations they assume that the number of graves can still be used as an indication of population size (Kristiansen 1978a:169f; Randsborg 1975:202). Given the many Bronze Age settlements with houses which have been excavated during the last 30 years, especially in Jutland, the situation today is totally different. For the first time we have independent evidence of the extent of settlement

and can compare the two find categories, graves and settlements, thus being able to view e.g. Kristian Kristiansen's representation of north-west Jutland in a new light. First, however, we have a few points about Zone 4, which is the technical term for just this area (Randsborg 1974:40f, 1975:200; Kristiansen 1978a:160f, 1978b:322).

Zone 4

In Randsborg's as well as Kristiansen's articles from the 1970s on Bronze Age settlement in Denmark the country is divided up into five zones according to the number and distribution of graves and to certain soil characteristics. Both authors define north-west Jutland as Zone 4 (Randsborg 1974:41; Kristiansen 1978a:159, 1978b:321). The only major difference is that Kristiansen included the northern part of Ringkøbing county under Zone 5 (Kristiansen 1978a:159, fig. 1 and 1978b:321, fig. 1), while Randsborg places this area under Zone 4 (Randsborg 1974:41, fig. 1 and 1975:199, fig. 3). In this article we follow Kristiansen's division, i.e. Zone 4 includes Vester Hanherred, Thy, Thyholm, Mors and Salling (Fig. 2). Except for the last mentioned area, this corresponds with the old Thisted county. All of Zone 4 is characterized by good soil with many Bronze Age grave finds, especially from Period III (Randsborg 1975:198, fig. 2). Because of these graves, Randsborg, as well as Kristiansen, consider Zone 4 as something special compared to the rest of Denmark.

Bronze Age settlement in Zone 4 especially for Period III

Randsborg and Kristiansen have soil potential as a common starting point. By comparing soil quality with the number of grave finds they note some systematic consistencies all over the country (Randsborg 1974:3, fig. 3; Kristiansen 1978a: fig. 12). Period III

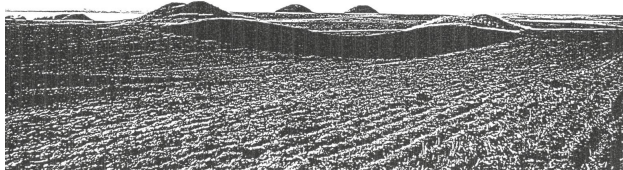


Fig. 1 Barrows from Visby, southern Thy. Photo & line-image print : Anne-Louise Olsen and Jens-H. Bech.

in Zone 4, however, completely breaks with this pattern, having a much larger number of graves than would be expected from the soil quality.

In the Early Bronze Age the inhabitants of Zone 4 chose to settle on heavy, fertile soils, while settlements in other areas were located on light or mediocre soils (Kristiansen 1978a:323f, 1978b:172). From Period II to Period III there is a tremendous rise in the number of graves and at the same time the settlement pattern changes from a dispersed to a more concentrated settlement (Kristiansen 1978a:176, 1978b:328; Randsborg 1975:198, figs. 1 and 2). As indicated by a great rise in the number of graves, population density in Period III had reached a level close to carrying capacity (Kristiansen 1978a:176; Randsborg 1975:200). According to Randsborg it did not lead to crisis-like conditions in north-west Jutland, however. Just at this time, in Period III, the social structure became more stratified, and the strengthening of political leadership made it possible to change the subsistence structure in the form of an intensification of agriculture, possibly supplemented by fishing (Randsborg 1974, 1975). Kristiansen is in agreement with Randsborg in his view of both the changes in political structure and the subsistence strategy (Kristiansen 1978a:172ff), but does not think that it was sufficient to prevent a threatening economic crisis (Kristiansen 1978c:83). That this was triggered in Period IV was also due to external factors as described below.

Fluctuation in bronze supplies

Bronze was associated with wealth and high status. Bronze was not accumulated, however, but was deposited in graves and hoards, and in order to maintain a large consumption constant new supplies from Central and Middle Europe were necessary (Kristiansen 1978a:158). According to Kristiansen, bronze imports were far from being as regular as generally supposed, and in order to form a picture of spatial and chronological variations he analysed the circulation time for bronze (Kristiansen 1978a). This was done by measuring the degree of wear on selected artefact categories, since the degree of wear is assumed to be directly proportional with the circulation time (Kristiansen 1978a:159ff, 1978c:81f). The swords from Period III in Zone 4, especially, showed signs of excessive wear indicating that the circulation time in this period must have been much longer than in the previous period. Declining bronze supplies is the reason given for this, especially in the middle and late part of Period III.

Even in periods of declining bronze supplies it was of great importance to be able to demonstrate wealth, so the swords were

used for a comparatively long time and were probably inherited (Kristiansen 1978a:162). Ultimately, the presence of the extremely worn swords is due to the fact that during Period III the trade routes shifted from west to east (Kristiansen 1978c:83).

In other words, the previously intense trading contacts between north-west Jutland and northern Germany were reduced, partly due to an economic decline in Zone 5 (western and southern Jutland, cf. Fig. 2), which served as an intermediary, partly because the southern trade routes increasingly linked to eastern Denmark. In that way Zone 4 was almost insulated from the exchange networks (Kristiansen 1978a:167f). Henrik Thrane's distribution map of imports confirms that imported items, apart from a single find from Salling, no longer occurred in Zone 4 (Thrane 1975:240, fig. 131). Therefore, at the end of Period III north-west Jutland is interpreted as a retarded area with the development of a particular conservative phase named sub-Period III (Randsborg 1972; Kristiansen 1978c:79), which is perceived as yet another sign of crisis.

Signs of crisis in the middle of the Bronze Age?

The isolation of sub-Period III is based on the development of new artefact types. Especially fibulae, buttons, arm-rings and belt plates were designed in a new way. Stylistically they correspond to a level between the types characterizing Periods III and IV respectively. Find combinations of these types include a small number of Central European swords, dress pins, and copies of these dated to Ha A2. After a thorough examination of the material Randsborg demonstrated that chronologically it can be ascribed to one phase which he calls sub-Period III (Randsborg 1972). By far the largest number of finds from sub-Period III is from the county of Thisted – in the island of Bornholm situated to the south-east of Sweden (Randsborg 1974: fig. 1) and the north Friesian Islands (Fig. 2) are found smaller concentrations, whereas only a few, dispersed finds are known from the rest of South Scandinavia (Randsborg 1972). The correlation between north-west Jutland and Zealand is determined by imports from Ha A2 which are included in sub-Period III finds in north-west Jutland, but also in Period IV finds in Zealand. This is taken as proof that the transition to Period IV took place earlier in Zealand than in north-west Jutland. As a consequence, sub-Period III is regarded as an expression of a conservative development (Randsborg 1972; Kristiansen 1978c).

Kristiansen doubts whether it is actually possible to isolate sub-Period III, because it is difficult to delimit in relation to Period III. The very long circulation time for swords probably resulted in their occurring in many finds from sub-Period III or Period IV, including dress equipment with a short circulation time (Kristiansen 1978c:81f). A recent review of the material shows that overlaps do occur, as seen from other proper period transitions, but no older sword-types were found in combination with these artefacts.¹

The finds from sub-Period III constitute just over 20% of the total number of finds from Period III in Thisted county, but in our opinion it is not necessarily an indication of the phase length. However, new ¹⁴C-datings of cremated bones from the graves seem to solve some of the questions concerning sub-Period III. Although based on only two datings from north-west Jutland² the phase seems to be real and to be within the absolute chronological

¹ Ongoing project: 'Køn, Krukker og Kronologi' by K. M. Hornstrup.

² Gærup, Stagstrup parish (Aner & Kersten 2001:5015A) 2910 ± 44 BP and Sillerslev, Øster Assels parish (Hornstrup & Mikkelsen 2010) 2938 ± 41 BP (Olsen et al. 2011:264, fig. 1.).

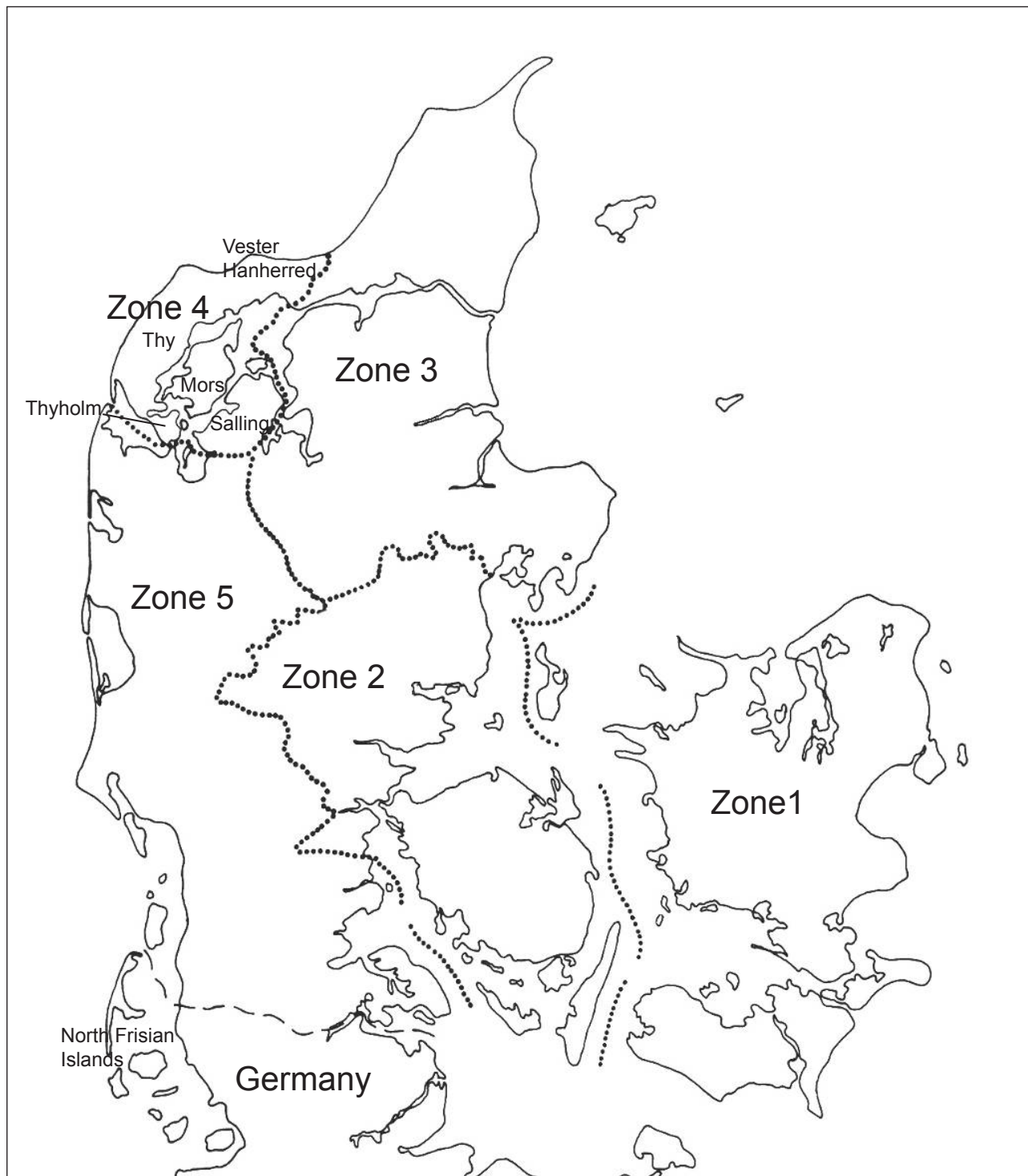


Fig. 2 Zone 4 (redrawn after Kristiansen 1978b:321).

limits normally defining Period III and immediately before Period IV (Olsen et al. 2011). Still missing are similar ^{14}C -datings of some of the Period IV finds in eastern Denmark, which are interpreted as contemporaneous with the sub-Period III in Zone 4. At least, the possibility exists that in the future it will be possible to include absolute datings in an old discussion and thereby shed new light on the development in Zone 4, also in relation to eastern Denmark.

As it appears today the early part of Period III is characterized by an unusually large number of weapon graves and a smaller

number of graves with ornaments; moreover, both categories often contain gold ornaments (Hornstrup 1998:28). In late Period III the situation is reversed with only a small number of weapon graves and a clear dominance of graves with ornaments. It is especially remarkable that in the northern part of Thy several richly furnished graves occur with belt plates, necklaces, arm-rings and in some cases gold spirals (Hornstrup 1998:28) (Fig. 3). These changes suggest that women occupied a more prominent position in society at the expense of the men (Hornstrup 1998:31), but it is unknown whether there were other changes in the political structure. At any

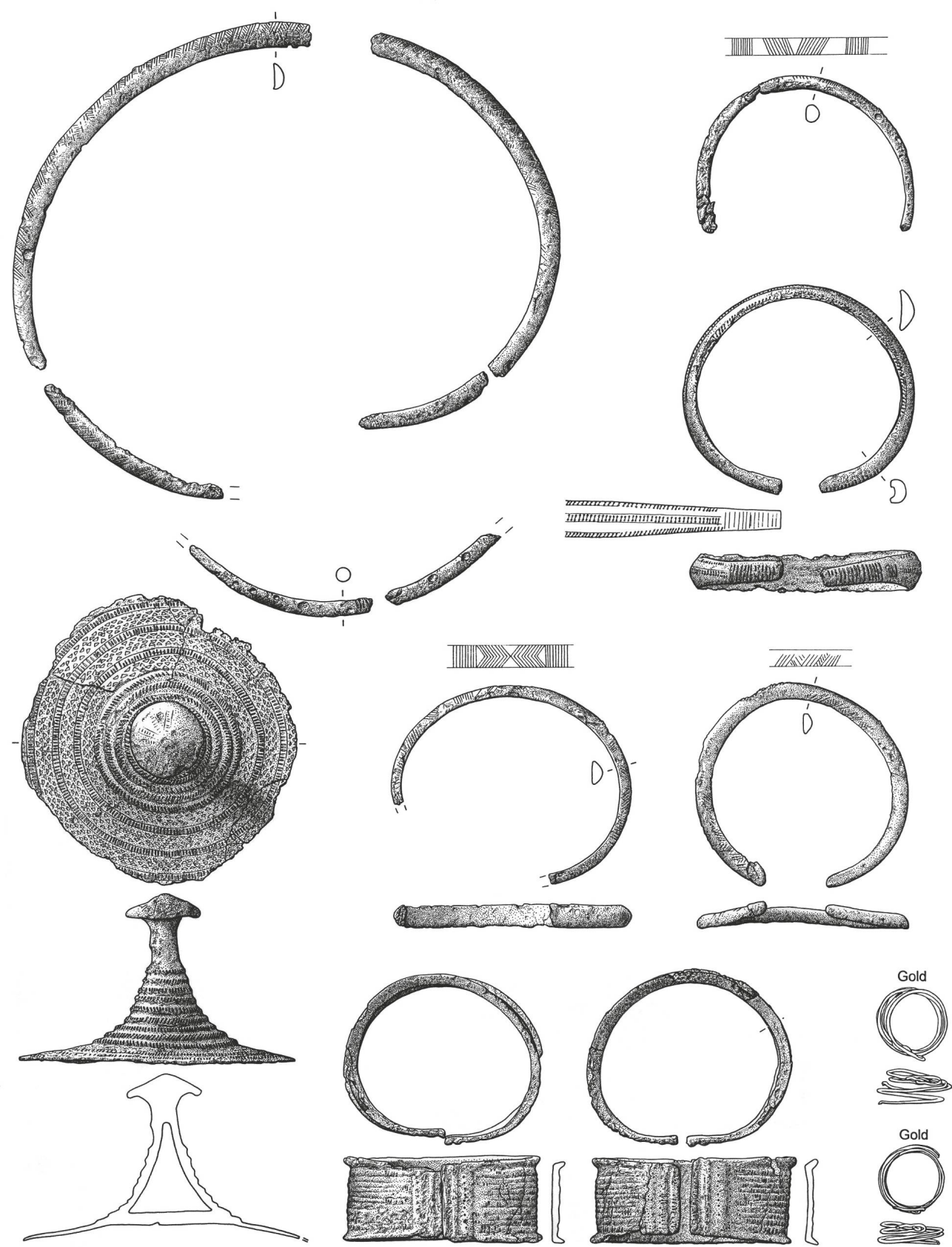


Fig. 3 Female equipment from a sub-Period III grave from Torsted, Ke 5238B (after Aner & Kersten 2001).

rate, the results emphasize the fact that sub-Period III is a reality and apparently denotes a phase with a special position for women.

In answer to the question whether the incipient metal scarcity, which Kristiansen pointed out, can be traced in the late Period III, it must be noted that even though there are relatively few swords at this time the other artefact types, especially women's ornaments, are both larger and heavier than in the remaining part of Period III. If metal scarcity was apparent people from an economic point of view would hardly use such large amounts of bronze for ornaments.

Period IV – conservatism or innovation in Zone 4

According to Kristiansen, the large population growth in Period III was followed by an almost corresponding decline in Period IV (Kristiansen 1978a:173ff, 1978b:327f). A new tally of the finds shows, however, that the decline was less marked (Fig. 7A). Since there are two different calculation methods behind the results, this may be one reason for the divergence. The present calculation is based on numerical data, whereas Kristiansen's figures are obtained by a calculation of each Zone's percentage of the total number of finds in each period (Kristiansen 1978a:fig. 10). Another possible explanation is that the source material in our calculations is considerably increased compared to Kristiansen's, which is based on Broholm's (1943, 1946) find catalogues. Finally, it must be mentioned that the two areas are not identical, since Salling is included in Kristiansen's Zone 4. What is not clear from the two calculations, but which is important for the overall estimation of population size, is that Periods III and IV do not have equal lengths. More recent scientific datings show that Period III began c. 1330 BC and ended around 1100 BC (Olsen et al. 2011:272, table 4). Period IV presumably ended c. 900 BC, possibly a little earlier (Olsen et al. 2011:272, table 4). The two estimations therefore cover 230 years in Period III and at the most 200 years in Period IV, which contributes to a further reduction of the disparities in population size.

According to Kristiansen there was a noticeable metal scarcity in Period IV, since Zone 4 was nearly isolated from the international trade networks. The situation is solidified by an estimate of the amount of bronze in the five zones. It appears that in Period III Zone 4 was in a leading position, but in Period IV it possessed the least bronze (Kristiansen 1978a:170). As basis for his calculations, Kristiansen used the swords, which in this period were almost exclusively deposited as hoards or single finds apart from in Zealand and modestly in Zone 4, where they were still used as grave goods (1978a:162). There are a few single finds of swords in Zone 4, but no hoards, and the relatively few swords in the graves can in no way compensate for it.

The grave goods in Zone 4 are characterized by types which appear throughout the country, e.g. razors, lancets and tweezers.³ Women were usually buried with artefacts that do not occur in male graves, i.e. bronze spirals and dress pins.⁴ Yet, female graves also contained artefacts of bone, especially ornamented pins and needles.⁵ It seems likely that the use of bone as a raw material can be interpreted as an indication of a shortage of bronze. However, the bone objects not only occurred in Zone 4, but also in Zone 3, which actually had the greatest concentration (Baudou 1960: Karte 45 and 46). Since Zone 3 continued to perceive relatively

large supplies of bronze from the south (Kristiansen 1978a:168), the idea of the bone material as evidence of a metal shortage is weakened. Another aspect is that a number of specific bronze types are only found in Zones 3 and 4 (Baudou 1960:110). On the basis of the mentioned features, one could imagine that the two zones in Period IV were linked in a network. This might explain why the graves from Zone 4 contained bronze objects to the same extent as in other parts of the country.

The last point concerns an interesting question Kristiansen asks in his third article from 1978. Is there a connection between, respectively, innovation and boom – and between conservatism and recession (Kristiansen 1978c)? That innovation and import were closely connected is well-known, but Kristiansen includes the economic conditions in his hypothesis. He points out that Zone 4 in Period III was innovative and characterized by a boom, but during sub-Period III conditions changed, and from the beginning of Period IV Zealand became the new centre. As a result, Zone 4 was marked by recession and conservatism (Kristiansen 1978c).

In other words Zealand was the new innovation area in Period IV, but did this mean that every kind of innovation took place exactly there? This is not our opinion. On the contrary, as the following examples will show, innovations belonging to the ritual/religious sphere were actually developed in northern Jutland in Period IV.

Flemming Kaul has isolated a group of razors from Period IV with s-shaped bird-neck handles on which the ornamentation consists of folded ships. The majority of these razors are from Thisted county. 'In the course of this early, innovative phase, which probably happened rather quickly, a special form developed, with its centre in Thisted county in north-western Jylland, showing that this area was enjoying an independent and vital artistic development in period IV' (Kaul 1998:146, 126 fig. 83).

Stylistic elements from ornamented razors have, moreover, been used as decoration on a unique face-urn from Stagstrup parish in Thy, which is ¹⁴C-dated to Period IV (Fig. 4a-b; Olsen et al. 2011: 269, table 3, AAR-9525; Kneisel 2012: 582, DK 166). The face consists of two round eyes connected with a curve, and between the eyes there is a rectangular knob. Below this is a motif resembling a ship, but since the figure has two legs it should rather be seen as a stylized animal (Mikkelsen 2000:87; Kneisel 2012: 879, Taf. 25). Moreover, the whole face is framed by a meander ornamentation. Razors are normally found in male graves, but an anthropological analysis of the cremated bones from the face-urn showed that the grave is that of a child under six years of age.⁶ In her dissertation, Jutta Kneisel has demonstrated that the development of face-urns in Scandinavia took place in the Limfjord region, and, it happened in Period IV (Kneisel 2012: 486f).

Kristiansen describes Thisted county as a conservative area, but these examples show that innovation continued. Worth noting is that innovation was connected with razors and face-urns with motifs from the Bronze Age religion.

As the number of grave finds from Period IV shows, the population remained relatively large in Zone 4. The fact that the grave goods apparently did not differ from the norm further south-east in Zone 3 makes it possible to consider Zone 4 as part of a larger north-west and north central Jutlandic region, characterized by a

³ Ongoing project: 'Køn, Krukker og Kronologi' by K. M. Hornstrup.

⁴ Ongoing project: 'Køn, Krukker og Kronologi' by K. M. Hornstrup.

⁵ Ongoing project: 'Køn, Krukker og Kronologi' by K. M. Hornstrup.

⁶ The anthropological analysis is being carried out by Signe Andersen and Pia Bennike, Laboratory of Biological Anthropology, University of Copenhagen.



Fig. 4a The face urn from Stagstrup (THY 3873x4A). Fig. 4b. Close-up of the face and the animal. Photos: Jens-Henrik Bech.

concentration of distinct local types, a high level of innovation and a relatively dense population. As early as 1960 Evert Baudou drew attention to the many Period IV finds in the central part of Zone III and by linking zone 4 to this, north-west Jutland forms part of a significant settlement centre in Jutland corresponding to an eastern Danish settlement centre in Zealand (Baudou 1960:110). This is supported by new ^{14}C -dated Bronze Age houses from Thy.

^{14}C -dated Bronze Age houses from Thy

The large rise in the number of known Bronze Age settlements in Denmark is due first and foremost to the development of later years where preliminary archaeological excavations have become more and more extensive. Therefore, it is mainly rescue archaeology which has procured the new material, while Danish research projects, which have included field surveys, have in a few cases only led to the identification and excavation of Bronze Age settlements (Bech 2003). However, new results have also been obtained by a valuable combination of rescue excavations and research excavations as was the case in north-west Jutland with the Thy project (Kristiansen 1998; Earle et al. 1998; Bech 2003; Kristiansen & Earle 2010).

No one knows exactly how many Bronze Age houses have been excavated in Denmark so far. A rough estimate of the number probably lies around 1000, of which by far the largest part has been found in Jutland (Bech and Rasmussen in press). In order to be utilized in the best possible way and to be compared with the distribution and dating of the many Bronze Age grave finds, it is absolutely necessary that the houses be ^{14}C -dated, which unfortunately is the case in only a rather small proportion. On a national basis an estimate of hardly more than 10 % of the houses live up to this demand. Still fewer have been published, and thereby made accessible to research. Until now the largest collection of published and dated Bronze Age houses is still the one which P. Ethelberg presented from southern Jutland in the year 2000. The situation is improving, however, since the number of datings being carried out in all of Denmark is continually rising, while at the same time a fairly large number of dated houses are

being presented from Thy (Bech & Rasmussen in press; Bech & Olsen in press). With this material as a starting point we will have a closer look at the Bronze Age settlement of north-west Jutland.

In Thy, to date, there have been approximately 175 houses excavated, partly or in full, which can more or less be securely dated to the Bronze Age. Another, smaller group of 25 houses at the most are placed in the Late Neolithic. Of these around 200 houses, 47 have been ^{14}C -dated so far. The basic data can be seen in Fig. 5, and the resulting datings are illustrated in Fig. 6, where every single dated house is listed in the column on the far left. For houses with several datings the figure shows the average date. Finally, on the far right the size of every house in square metres is shown as horizontal columns. If we look further on at the sum of probability distributions (Fig. 6 top and Fig. 7C) the strong bias in the datings, with many houses from Periods III and IV especially, is striking. On the other hand very few houses belong to the Late Neolithic, and still fewer date from the second half of the Late Bronze Age. It is therefore very relevant to ask: is this is a representative picture which can be used for drawing further conclusions?

A representative sample?

At the outset it is important to be aware that the selection of houses for ^{14}C -dating in itself contains a risk of biasing, as the more poorly preserved houses might be presumed to be disregarded in favour of the well preserved houses with intact walls and clearly visible entrances. During the Bronze Age there is a clear tendency for wall-posts to be less deeply founded over time, thus the most recent houses, where only the roof-supports are preserved (Ethelberg 1993:152 f.), would certainly be underrepresented. No doubt this is one of the explanations of the small number of houses from the Late Bronze Age Periods V and VI. But how about the earlier houses? As regards houses belonging to Periods II and III there does not seem to be details in wall constructions which should favour the selection of houses from one period more than from the other. Probably the same holds true for Early Bronze Age Period I.

<i>14C-dated houses from Thy</i>	<i>Houses with one 14C-date</i>	<i>Houses with two 14C-dates</i>	<i>Houses with three or more 14C-dates</i>	<i>In all</i>
Cerealia	9	52	3	64
Wood (Quercus)		1	4	5
Wood (Corylus)	1		1	2
Wood (Salix)	4	1		5
Wood (Alnus)			2	2
Wood (Pinus)			2	2
Wood (Calluna + Hippóphae)			1	1
wood (undetermined)	1			1
Peat		2		2
Conventional 14C	2	4	8	14
AMS	13	52	5	70
Number of 14C-dates	15	56	13	84
Number of houses	15	28	4	47

Fig. 5 Materials used for 14C-dating 47 houses from Thy. The majority are dated using AMS-dates of cereals.

For this reason there is hardly any doubt that the marked rise in the number of houses during the Early Bronze Age is real and reflects a rise in activity, an extension of settlement and probably also a rise in population size throughout the period.⁷ Another explanation of the many houses from Periods III and IV might of course be that the houses had become smaller over time so that more houses were needed to contain the same population as formerly. This does not seem to have been the case, however. A look at the house sizes as they are depicted in Fig. 6 shows that among the houses from Period III and the transition to Period IV quite large and spacious houses can also be found, even if they rarely exceed 200 square metres. Moreover, differences in the functions of the ¹⁴C-dated houses cannot be demonstrated to any extent which could have materially biased the picture (Bech 2012). For example, houses with two habitation units are known from Periods III/IV as well as from Period II (Bech & Olsen in press).

The datings clearly show that the development really speeds up from the middle of the Early Bronze Age Period II, around 1400 BC. This rise in activity corresponds perfectly with a decline in the percentage of tree pollen in the regional diagrams from Hassing Huse mose and Ove sø (Fig. 7B). Actually the similarity is even greater, as the course of the decline in the tree pollen frequencies throughout the Late Neolithic and the Early Bronze Age show a striking likeness to the datings of the houses as they appear in Fig. 7C. The similarity between the pollen diagram and the ¹⁴C-dated houses therefore helps to confirm our interpretation of the development.

Another and more problematic question is: how did things developed from the end of the Early Bronze Age onwards, and can the ¹⁴C-dated houses from this period be used to throw any light on this at all?

Fårtoft and Storodde

First it must be stressed that the ¹⁴C-dated houses are not evenly distributed in Thy, as the largest number of dated houses have

been found within a fairly small area in northern and central Thy with a diameter of no more than approximately 30 km (Fig. 8). In particular, excavations on the eastern outskirts of Thisted, at the sites Fårtoft and Storodde, have revealed a large number of houses (Figs. 8:3, 9), which makes it relevant to have a closer look to see if there are special conditions here which might influence the total picture.

Fårtoft and the neighbouring site Storodde lie in an even terrain with soils of sandy clay, sloping towards the Limfjord (Fig. 9). Around 25 ha have been excavated in several campaigns from 1997 onwards as the town grew towards the east. The houses were identified in close-lying test trenches, normally placed N-S with intervals of 14-15 m. Where a house was located the test trench was extended and a proper excavation was conducted. Apart from a somewhat marked ravine separating Fårtoft from Storodde, the landscape shows no clear topographical boundaries. Judging from the find distributions it is fair to assume that the surrounding areas still contain many houses in addition to those which have already been excavated. On the basis of the excavations which have been carried through until now it can therefore only be said that there have been *at least* 38 Bronze Age houses in the area (Fig. 9). So far, 18 of these have been ¹⁴C-dated with only one house placed securely in Period II and the rest covering primarily the second half of Period III and the first half of Period IV.⁸ There were no traces of a Late Neolithic occupation which means that we have here a clear example of an incipient occupation and exploitation of the area during Period II, with a marked growth in the activity over a 250 year period equally distributed on both sides of the border between the Early and the Late Bronze Age around 1100 B.C.

It should be added that the many ¹⁴C-datings from Fårtoft have mainly been provided through an independent project financed by the Heritage Agency of Denmark, the aim of which was to increase the number of ¹⁴C-dated houses from the Middle and

⁷ This view on the development in population size through the Bronze Age is in conflict with the opinion that a moderately low population density in Thy continued through the Bronze Age (Earle & Kolb 2010:62).

⁸ Since the final version of this manuscript three more houses from Fårtoft have been dated with very similar results: from Period IV Fårtoft 1,2 house I (2874 +/- 19 BP (average of AAR-13836, 13837 and 15404), Fårtoft 1,2 house II (2821 +/- 17 BP (average of AAR-15405 and 15406) and Fårtoft 1,6 house II (2890 +/- 18 BP (average of AAR-15409 and 15410). Finally from Fårtoft 1,3 house I two new ¹⁴C samples date the house to Period IV or Period V (AAR-15407: 2708 +/- 45 BP and AAR-15408 : 2842 +/- 23 BP).

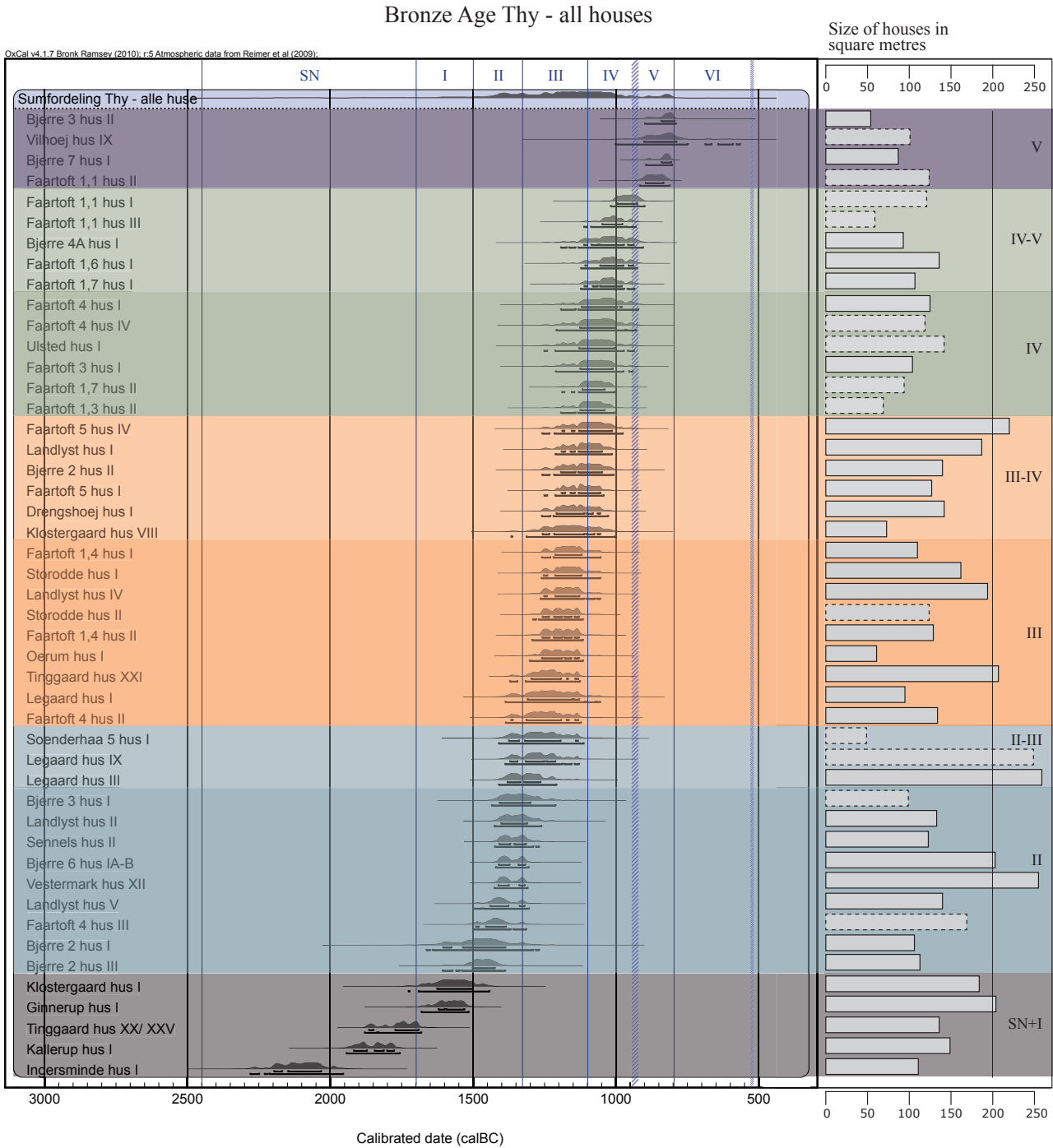


Fig. 6 All ^{14}C -dated houses from Thy from the Late Neolithic (SN) and the Bronze Age. The absolute chronology is based on Olsen et al. 2011: 271, table 4. The transition from Period IV to Period V is 950/920 BC, and Period VI terminates 530/520 BC. Graphic: K. M. Hornstrup & J. Heinemeier.

Late Bronze Age in north-west Jutland. As the old material from the excavations at Fårtoft in 1997-1998 contained a large number of macrobotanical samples from houses, which from an archaeological evaluation seemed to belong to this period, nine houses were added to the existing collection of dated houses from the site through ^{14}C -datings of charred grain from holes for roof-supporting posts and from pits. Among the formerly dated houses, Period III was already well represented, but to our surprise the new datings likewise fell into Period III and the first half of Period IV, while only one house was from Period V and none belonged to the

end of the Bronze Age. This distribution no doubt gives a good picture of Bronze Age activity in the area and is also the main reason for the pronounced peak in Periods III-IV, which is seen in the sum of probability distributions from ^{14}C -dated houses in Fig. 7C. Whether the special stress on the end of Period III and the first half of Period IV also goes for settlements in other parts of Thy is a question which cannot be answered yet. On the face of it this might very well be the case at many sites, but remains for the present a hypothesis which can only be tested with material from new ^{14}C -datings.

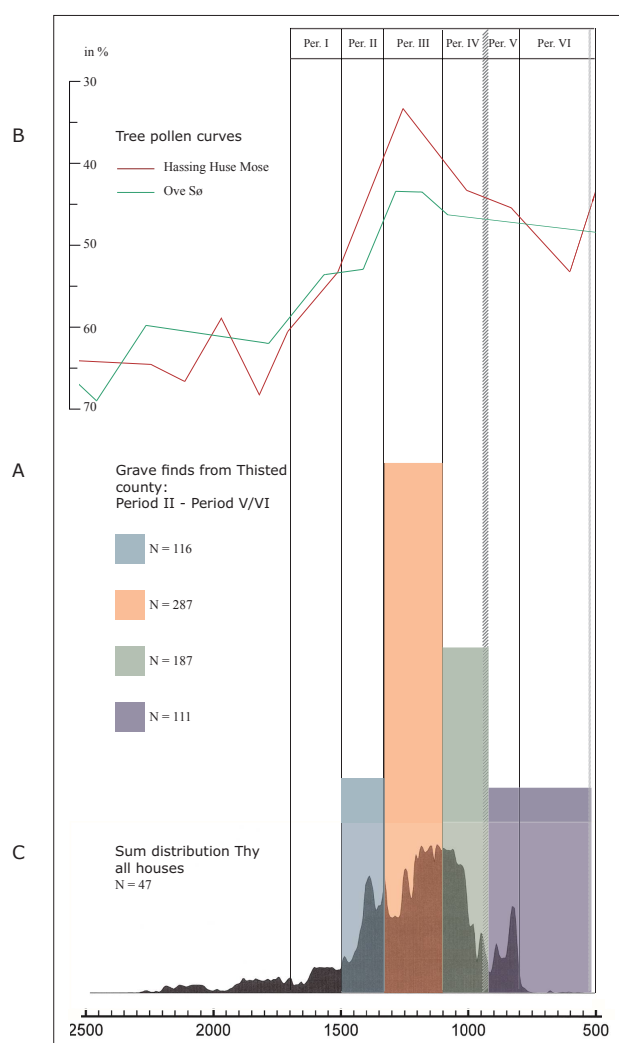


Fig. 7A: The percentage distribution of grave finds from Thisted county in Periods II, III, IV, and V-VI, in all 576 finds from graves and barrows, the latter presumably graves. B: Tree pollen curves 2500 – 500 BC in percentages of total land plant pollen. Based on pollen diagrams from Hassing Huse Mose and Ove Sø (Andersen 1995a+b). C: Sum distribution of dated houses from Thy (fig. 6, *oxCal* v4.1.7). The absolute chronology is based on Olsen et al. 2011: 271, table 4. The transition from Period IV to Period V occurred 950/920 BC, and Period VI terminates 530/520 BC. Graphic: K. M. Hornstrup.

Among those sites in Thy which have yielded material for ^{14}C -datings, Fårtoft is so far the only one for which it can be stated with a high degree of certainty that there must have existed at least some contemporary farms within the same square kilometre during the abovementioned 250-year period from late Period III to early Period IV, where the largest group of houses belong (Bech 2012). That close-lying farms also existed earlier in the Bronze Age, where soil conditions and topography were favourable, is indicated by e.g. the finds from Bjerre Enge (Bech and Olsen 2013).

Conclusion

For the first time it is possible by the use of data from ^{14}C -dated houses to establish a connection to Randsborg's and Kristiansen's representations of the course of settlement in Zone 4. The rising

number of houses during the Early Bronze Age no doubt mirror the rise in the number of grave finds from Period II to Period III (Fig. 7A; Randsborg 1974:198, figs. 1-2). At the middle of the Bronze Age Thy was really closely settled, and the area also seems to have had a growing population. At the same time Fårtoft can also be seen as an example of a settlement with at least some close-lying farms. As a matter of fact the present data can be interpreted as the result of a contraction of the settlement like the one shown by Kristiansen to have taken place in Zone 4 from Period III to Period IV (Kristiansen 1978a:174; 1978b:327). To what degree Fårtoft is also representative of the settlement in wider areas of Thy and of the further development in the Late Bronze Age cannot be determined yet. This will take more 14 C-datings from far more sites. But nothing indicates that Period IV was a time of crisis from the start – neither the grave finds nor the settlement material.

It is possible, however, that more difficult times set in at the end of period IV, where our ^{14}C -dated houses begin to fail. The smaller number of grave finds from Periods V-VI compared to Period IV (Fig. 7A) could be interpreted as a result of a dwindling population, especially as the finds from Period V-VI must be spread over a greater length of time than those from Period IV. The situation may also have been influenced by the fact that the well-known change in the climate between the subboreal and the subatlantic periods should be placed around 800 B.C. according to recent research and datings (Geel et al. 1996; Geel and Renssen 1998), i.e. at the end of Period V (Lanting and van der Plicht 2003; Olsen et al. 2011) and not at the transition from Bronze Age to Iron Age as was formerly supposed (Brøndsted 1958:261ff). At least this goes for the settlements exploiting the more low-lying soils like at Bjerre, where the settlement on the raised sea-bed had to be abandoned as the result of a rising groundwater level and peat formation during the eighth century B.C. (Bech in press; Søgård et al. in press). Pollen analysis shows, however, that there was still a considerable human impact on the surrounding landscape in Periods V and VI. Even though the forest expands again somewhat during the Late Bronze Age, the open land still covered a larger part of the area than was the case at the end of the Neolithic, as shown by the levels for both grass pollen and pollen diversity in the regional pollen diagrams from Hassing Huse Mose and Ove Sø (Andersen 1995a&b).

In Kristian Kristiansen's articles from 1978 several of the then accepted perceptions of the Bronze Age as a steady, progressive period with no great fluctuations or crises were revised. In this article the large fluctuations in the data material throughout the Bronze Age in Thy have been examined, but it has not been possible to see a large crisis on the transition between the Early and the Late Bronze Age. On the contrary, the highest level of activity seems to lie within a period of 250 years at the end of Period III and the first half of Period IV. Not until the following centuries do a decline and a possible crisis set in. The decline is reflected by the number of grave finds which is lower in Periods V and VI together than it was in Period IV (Fig. 7A). Based on the grave finds the decline in settlement took place on the comparatively inferior soils in Northern Thy in particular and only to a smaller extent on the better soils in the central and southern parts of the area.

There is a need of similar regional investigations from other parts of the country, where the settlement finds with many more ^{14}C -dated houses can deliver new data for the illustration of the many differences and fluctuations which can be seen in the data from period to period and from region to region in Denmark.

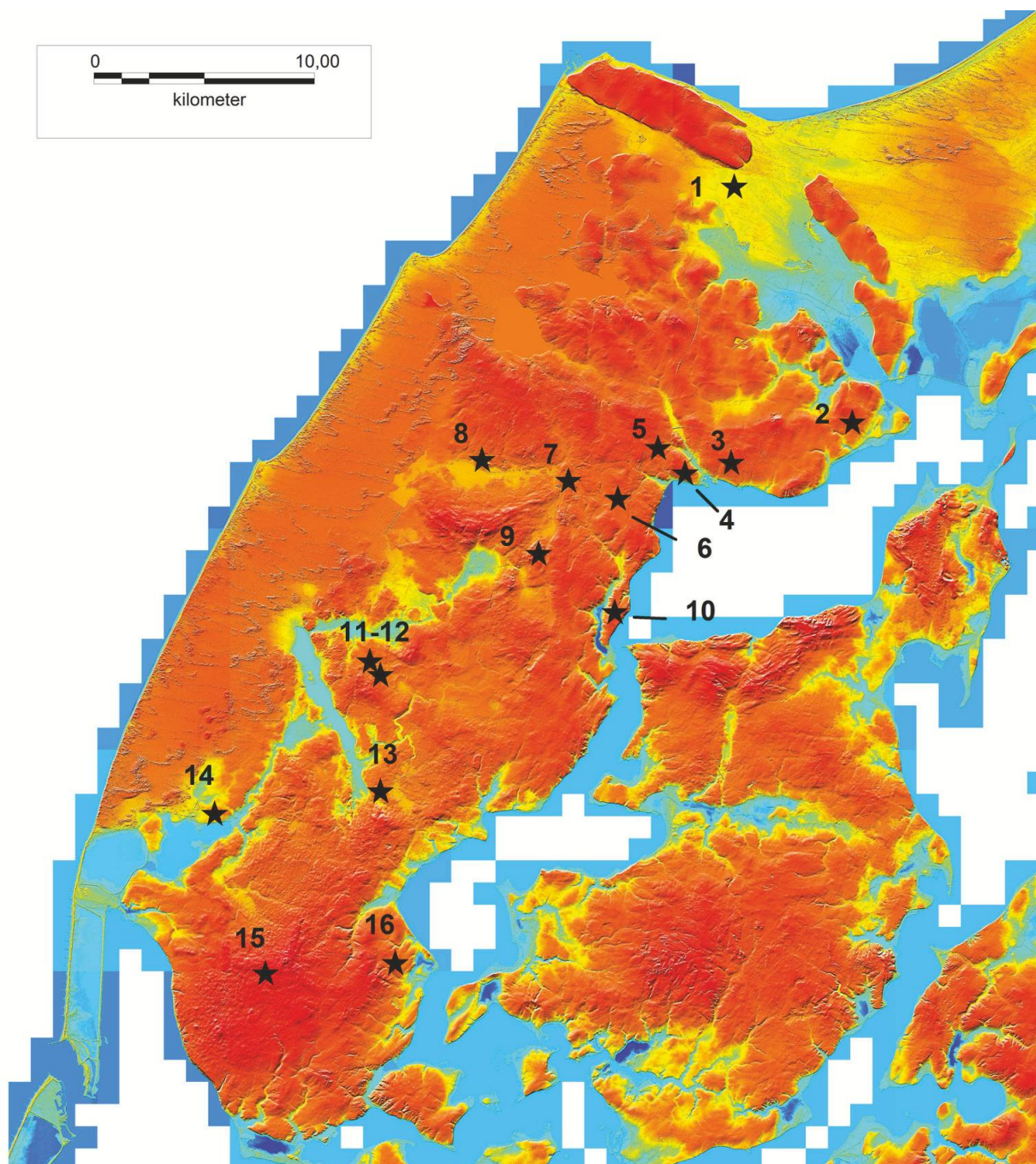


Fig. 8 Relief map with the distribution of ¹⁴C-dated Late Neolithic and Bronze Age houses from Thy. 1: Bjerre; 2: Sennels; 3: Fårtoft and Storodde; 4: Landlyst; 5: Drengshøj; 6: Vestermark; 7: Tinggaard; 8: Klostergård; 9: Kallerup; 10: Vilhøj; 11-12: Legård and Sønderhå 5; 13: Ingersminde; 14: Ørum; 15: Ulsted; 16: Ginnerup. Copyright : Danish National Survey and Cadastre.

Final remarks

In Danish archaeology Kristian was the first to place Bronze Age subsistence strategy and land use in an ecological context with a deliberate use of the pollen analytical results which were then available from several investigations around the country. Therefore it was no coincidence when, shortly after, as head of the office of Cultural History in the department of Forestry and Nature, he advocated for a cooperation with the geologists at the Geological Survey of Denmark to carry out even more pollen investigations. In this way the number of regional pollen diagrams

were increased on a national scale, and prehistoric monuments of even more areas were placed in their correct environmental context. Thus it was also Kristian who stood behind Svend Th. Andersen's work on the two large regional pollen diagrams from Thy, which formed part of the prelude to the Thy Project and the cooperation with e.g. Tim Earle and American archaeology. That Kristian took a leading part in the launching of this project is no surprise, given his earlier interest in the Bronze Age of the area. In this way, to the archaeological work in Thy came a growing focus on macrobotany and the possibility, through systematic flotation sampling, of acquiring a new set of data for the illustration of

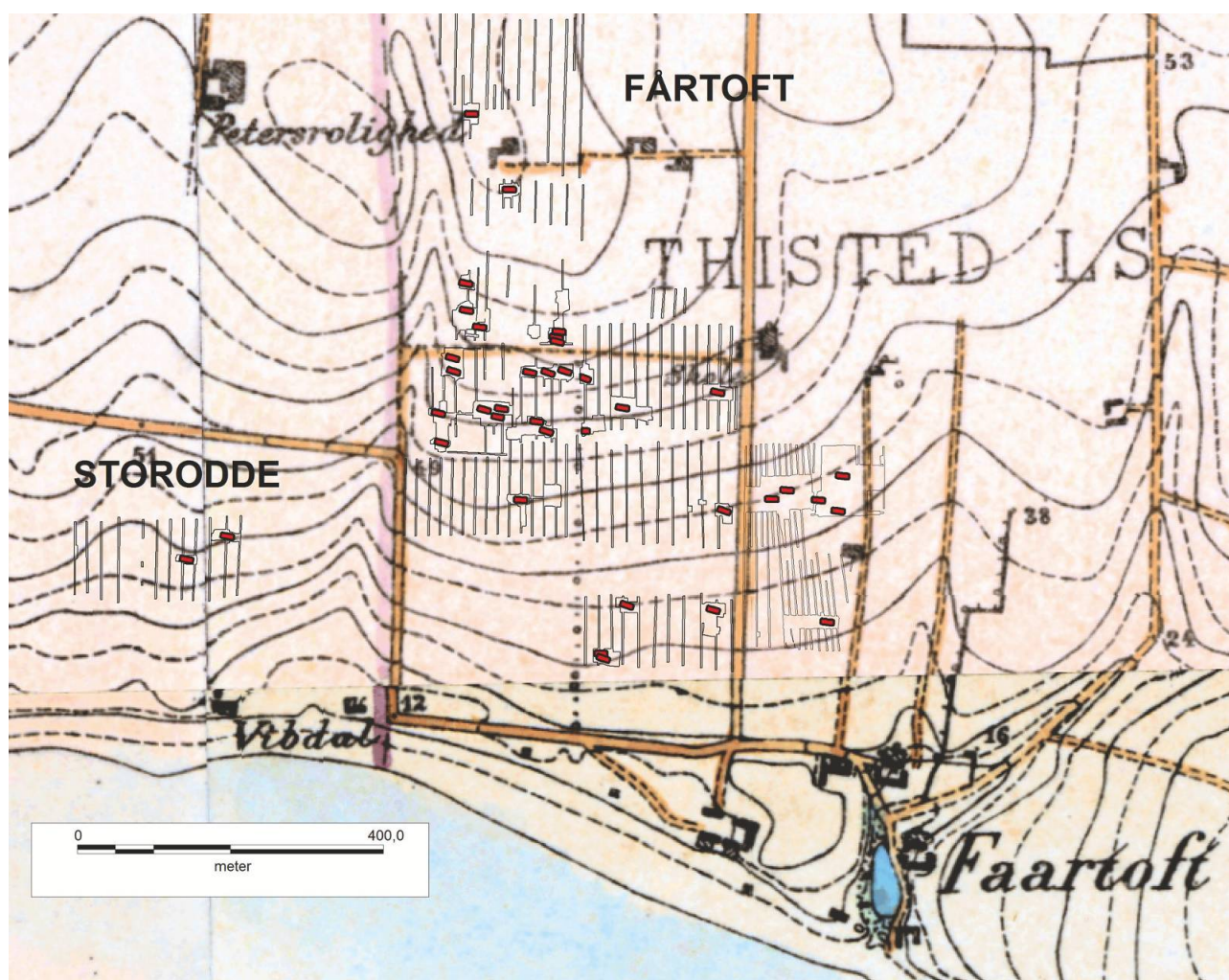


Fig. 9 The Bronze Age sites of Fårtoft and Storodde, Thy. Excavated areas with a minimum number of Bronze Age houses. Copyright of background map: Danish National Survey and Cadastre.

subsistence strategy and household activities. This practice of bringing home a heap of flotation samples spread to many other excavations aside from those of the Thy project, including the excavations at Fårtoft, where more than 2000 litres of soil were floated in cooperation with the Thy project. As described above, the many flotation samples contained ideal material for AMS-datings. Thus Kristian has his indirect as well as his direct share in the many ^{14}C datings from Thy.

Things hang together in Kristian's extensive and impressive work. It is therefore obvious to view the years of the Thy Project and the cooperation with the Museum of Thy and Vester Hanherred as a natural continuation of his old interest in the area. Of course one may disagree with Kristian on many points, indeed it would be strange otherwise. But without his contributions and his insistence on seeing connections where the rest of us often tend to see too many details, we would be far worse off and would have lacked a fellow player as well as an opponent, for example when the questions of the Bronze Age in Zone 4 were up for debate.

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HERDER COMMUNITIES: LONGHOUSES, CATTLE AND LANDSCAPE ORGANIZATION IN THE NORDIC EARLY AND MIDDLE BRONZE AGE

Mads Kähler Holst and Marianne Rasmussen

Abstract: The significance of cattle in the South Scandinavian Bronze Age economy has often been proposed. Still, the focus on longhouses and territorial aspects in most models of landscape organization tends to entail a fixed spatial logic more consistent with a predominant crop cultivation economy. Starting from the assumption of the significance of cattle we propose a different hypothetical model of landscape organization without bounded territories and involving long-distance herding. Based on environmental evidence and the overall barrow and settlement distribution in south-west Jutland (Zone II) we suggest that the region was characterized by a very uneven settlement density, and that the spatial organization is best understood on a large geographical scale comprising most of the peninsula and with a complex exploitation of the landscape.

Keywords: landscape organization, herding, territoriality, mobility, south-west Jutland (Zone II), settlement pattern, barrow distribution

From pasture to farmland

The discovery of longhouses from the South Scandinavian Early and Middle Bronze Age (1750 – 1100 BC) has had a deep, but in some respects subtle, impact on our perception of the spatial organization of the period. It has entailed a gradual drift from a perception of a mobile and semi-nomadic economy with fleeting settlements towards an increasingly more sedentary model of life and a landscape marked by a strong territoriality centred on the relatively stable settlement entities represented by the longhouses.

When the first houses began to emerge in the 1980s, it occurred against the background of an already developed Iron Age longhouse archaeology with well-established perceptions of the associated spatial and social organization (Becker 1972, 1982; Boas 1983, 1991, 1993; Ethelberg 1987, 1993; Hvass 1988). Many of these concepts drew upon analogies to the historically known villages and farmsteads of the late Medieval and Modern times based among other things on the apparent continuity in the development of settlements from the Iron Age to the Medieval Period. Consequently, the longhouse seemed a familiar and well understood phenomenon. This understanding had a strong impact on the interpretation of the Early and Middle Bronze Age houses. Perceptions of household structure, domestic life and economy implicitly, and explicitly, referred to models of the Iron Age farmstead.

However, despite the considerable changes in the perception of settlement organization the idea of a strong pastoral aspect to the Early and Middle Bronze Age economy remained. Even if the evidence is largely circumstantial there are several indications in environmental analysis, architecture and artefacts to support the significance of the cattle, not least in the region of Jutland. Consequently, the pastoralist element still figures prominently in surveys of the period, and not least in Kristian Kristiansen's works, where it stands as a central premise in his social syntheses, and with both empirical and theoretical arguments supporting the perception (Kristiansen 1978, 1998, 2006: 189ff). His theoretical point of departure in neo-evolutionism and structural marxism with theories on prestige goods systems makes the possession of cattle

an obvious means for the accumulation of capital (Kristiansen 2006: 180). The conception of power is tightly connected to the individual chief, his possession of animals and grazing land as well as his ability to lead cattle raids (Kristiansen 1998: 289, 2006: 186). Finally, the values of Bronze Age Society - based on a warrior ideology, competition and aggression - fit very well into historic analogies on groups of indo-European origin and the conception of a male-dominated, expansive and pastoralist society. In Kristiansen's own words, 'It was a warrior culture based upon the farming economy of cattle husbandry...' (1998: 289).

It may be argued, that the introduction of a basically new settlement organization in the theoretical models of the Early and Middle Bronze Age and the persistence of a cattle-based economy has left landscape organization in tension. In the Iron Age models, the ideas of strong territoriality has primarily referred to cultivated farmland, while the possibility of undivided and common grazing areas are left open (e.g. Fabech, Ringtved 2009: 167ff). In contrast, the assumed significance of cattle in the Bronze Age has implied that the discussions of territoriality in this period to a large extent have become focused on the grazing land. In this way, the cattle aspect of the economy may be said to have been modified to fit the predefined idea of the agrarian landscape organization of the Iron Age longhouses. Somewhat generalized, we can claim that an underlying concentric model has been established, with separate lying longhouses with fields around them and grazing areas beyond delimited by areas of liminality in which ritual depositions took place at the transition to the foreign and unknown world (Jæger & Laursen 1983; Ethelberg 2000: 248ff; Fokkens 1999) (Fig. 1).

The validity of this model is, however, not compelling. The assumed prominent pastoral aspect of the economy opens up the possibility for very different landscape organizations and utilizations. The most obvious example is transhumance, which relies on spatially very differently distributed process from the agrarian concentric model and with potentially far-reaching consequences for the perception of the landscape and territoriality (Frachetti 2008).

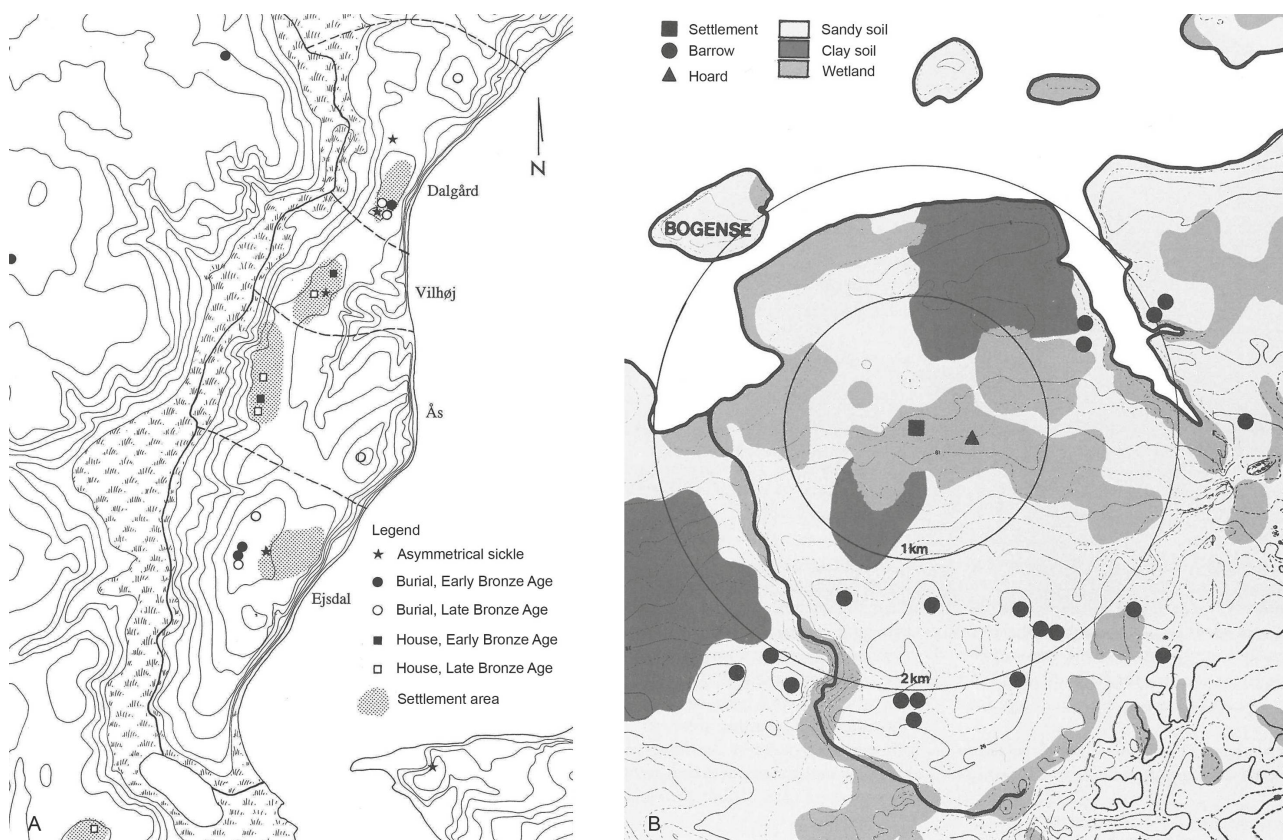


Fig. 1 Examples of the territorial models of South Scandinavian settlements. A) The Ås settlement in Thy in north-west Jutland (Mikkelsen 1996: 116). B) Lindebjerg on Funen (Jæger & Laursen 1983: 103).

In the following we will try to make the pastoral aspect of the economy the starting point for a reinterpretation of the Early and Middle Bronze Age landscape with particular reference to southern and western Jutland, Denmark.

The roots of the pastoral economy

The ideas of the existence of an Early Bronze Age pastoralist society rest on a long-lived narrative. The basis of the flourishing Bronze Age culture was the management of herds of sheep and cattle that, depending on the specific region, grazed either in the light forested areas or on the vast pastures, where the barrows of the ancestors reflected the milestones of life and territory.

Childe describes the Tumulus culture as 'largely pastoral and semi-nomadic' (1969: 173), while the Scandinavian Bronze Age is characterized in the following way: 'The distribution and grouping of the barrows - for very few settlements are known - produces the impression of a semi-nomadic people, living in little groups with a limited regular range' (Childe 1969: 169). Brøndsted describes the cultivation strategy of the Early Bronze Age as underdeveloped, and he explains the few known settlements as resulting from a very mobile economic strategy characterized by wandering shepherds (1958: 311). These views on Early Bronze Age subsistence mainly originated from an attempt to explain the striking absence of houses and settlements.

Later studies based their view on pollen-analysis and other evidence of land-use. The narrative of the pastoral society was maintained and the Early Bronze Age landscape in most regions

is seen as reflecting an extensive land use dominated by pasture and indicating extensive farming based on stock-breeding (Coles & Harding 1979: 289; Jensen 1979: 143). The barrows were closely tied to this landscape — being literally constructed out of pasture, i.e. the many hectares of turves cut into building-bricks. As mentioned above, the excavation of the first settlements with houses in the 1970s and 1980s did not contradict the ideas of extensive farming with plenty of live-stock, although the theories of a semi-nomadic existence were abandoned and interpretations of the social and spatial organization were considerably revised.

Comparison of the distribution of barrows (seen as a reflection of population density) and soil quality demonstrated the preference of Bronze Age people for the lighter soils (Kristiansen 1978: 174ff). This led to the following conclusion: 'Extensive land-use dominated by pasture and commons indicate extensive farming based on stock-breeding' (Kristiansen 1978: 174). The awareness of the environmental evidence was also reflected in an increased attention to pollen analyses and their testimony to land use and vegetation history. Not least in the Thy-project the pollen investigations and analysis of archaeobotanical data reached a new interpretative significance, when they were combined with extensive surveys and targeted excavations (Earle et al. 1998; Bech 2003; Stika & Heiss this volume). During the following decades, these efforts gave rise to numerous models of landscape organization and derived projects, in which the underlying significance of cattle breeding was maintained. The improved empirical evidence was accompanied by an elaboration of the social interpretations. The evidence of the pollen analysis were linked to changing power-structures with intensified competition



Fig. 2 Zone I and zone II. The overall boundaries as characterized by Kersten 1936: 97ff; Lomborg 1969, 1973: 130ff; Vandkilde 1996; Bergerbrant 2007: 34ff.

reflected in the very significant increased grazing pressure demonstrated in Thy during the Early Bronze Age (Kristiansen 1998: 289).

However, the concentric land-use model inherited from Iron Age studies remained a challenge to implement when confronted with Bronze Age data. How could the connection between the cattle breeding economy and the longhouses be understood (Rasmussen 1999)? And how could a dynamic land use with wandering farmsteads be combined with the permanent relation to land that the barrow building expressed (Roymans & Fokkens 1991; Rasmussen 1993; Gerritsen 2003)?

A Bronze Age landscape from a pastoral perspective

If we are to take the pastoral aspect of the Bronze Age economy seriously we need to implement a new model of landscape and settlement organization referring to a consideration of the overall properties of the physical landscape in relation to grassing potentials. Together with the considerable empirical increase in the settlement record over the last decades and an improved understanding of the barrow construction practices this will enable a consideration of utilization patterns on a spatial scale

extending beyond the individual settlements. As the major part of the increase in the archaeological record has been made in Jutland we will focus on this region, and particularly the southern and western parts.

The Jutish peninsula exhibits landscape variation on regional as well as on local levels. Through Danish prehistory the maximum extension of the Weichsel glacier is often presented as a boundary between two physically very different landscapes (Houmark-Nielsen et al. 2006: 302; Krüger 2006: 365; Odgaard 2006: 342ff). In several periods this coincides with distinct cultural areas. Thus in the Early and Middle Bronze Age the distinction between Zone I (the northern and eastern part of the peninsula) and Zone II (the western and southern part) represents an important distinction between varying burial rites, stylistic and symbolic diversity in material culture, exchange of bronzes and flow of knowledge and communication (Fig. 2). Of the two landscapes, the south and west Jutland Zone II appears environmentally best suited to pastoral practices. The region is traversed by plain and sandy east-west positioned river valleys with outwash deposits from the Weichsel glacial. They separate elevated, but generally quite eroded, sandy and loamy moraines of the Saale glacial. Within the valleys the post-glacial rivers and streams have formed narrower

beds with peat deposits around the meandering watercourses, and generally the outwash plains have numerous small wetland areas, particularly at the foot of the moraines. The largest of the rivers have been navigable for small vessels until modern times, and constituted impediments for land-based traffic although not unsurpassable. From a physical geographical perspective the landscape is in this way clearly zoned on the local level, which has had implications for both communication and land use.

The archaeological finds are not evenly distributed in this landscape. In particular the numerous barrows, of which up to 50% have Early to Middle Bronze Age burials, exhibit clear distribution patterns with linear alignments of the monuments through the landscape (Fig. 3). Dependent on the scale of representation different types of lines can be recognized, from overall broad bands of barrow traversing the entire Jutland peninsula, particularly in north-south courses, to thin lines forming an almost polygonal network on the local level. Regardless of scale, there appears to be a correspondence between the linear arrangements and natural terrestrial traffic corridors in the landscape. As such, the lines have been interpreted as the result of a preference for barrow construction along pathways in the landscape, and thereby they reflect an accumulated communication structure (Müller 1904; Holst, Breuning-Madsen & Rasmussen 2001; Johansen, Laursen & Holst 2004; Løvschal 2011).

The settlement evidence is still considerably more fragmented than the barrow evidence, but within the last couple of decades systematic trial trench excavations prior to land development have begun to draw new contours for settlement distribution in Jutland (Kulturarvstyrelsen 2008). The evidence suggests that we are dealing with a very uneven distribution of settlements. Large parts of Jutland, particularly on the sandy soils of the large melt water plains and part of the Saale moraine have so far, despite relatively intensive investigations, provided very limited evidence of settlements (Fig. 4). Longhouses are not completely absent, but their numbers are few and the individual settlements generally appear short-lived with just one or a few longhouse phases. In contrast, other regions have revealed a surprisingly dense concentration. This appears to be a north-west Jutland example of such a densely populated area, where a density of up to one farmstead for each 1-2 km² has been suggested based on intensive survey, although the contemporaneity and representivity of the various settlements is still somewhat uncertain (Bech & Mikkelsen 1999; Mikkelsen 1996; Kristiansen 1998).

Within Zone II the Kongeå-river valley in south-west Jutland has in recent years begun to emerge as another example of a densely populated area. Surveys and archaeological excavations have revealed close settlement concentrations along the banks of the river and in the immediate hinterland, to the extent that over long distances, the river valley appears as a coherent and narrow settlement zone (Jensen 1998; Rasmussen 1998; Laursen et al. 2003; Rasmussen et al. 2003; Poulsen & Brønd 2008). The dynamics of the settlements within this zone are still largely unclear. Some of the settlements appear to be short-lived, and there are indications of relatively large areas being abandoned for long periods. At other places there are remarkable continuities throughout the Bronze Age. Still, on an overall level and in a long term perspective, the settlement appears to be characterized by considerable dynamics, with new settlements regularly emerging at new positions in the landscape and old settlements being abandoned.

In the Kongeå River valley it is noteworthy that the apparent

settlement concentration along the river does not correspond precisely with the barrow distribution pattern. The marked barrow lines first and foremost traverse the Saale moraines and the secondary valleys between the major rivers and streams.

One of the areas where the settlement pattern appears particularly clear as a consequence of repeated archaeological investigations is the Tobøl-area north-east of Ribe (Fig. 5) (Holst, Rasmussen & Breuning-Madsen 2004; Holst & Rasmussen 2013). Here, along the Kongeå River, a distinct barrow group is located on the northern side of the river on a flat diluvial sandy plain between the wet-land surrounding the river and the hillier Saale moraine north of the area. To the East and West the barrow group is delimited by two small streams from the river. The barrow-group is structured in two parts with the eastern part encompassing the majority of the monuments – one of these being Skelhøj (Holst, Rasmussen & Breuning-Madsen 2004). The barrows in the western part are more scattered and cover a larger area.

The river has probably been an important parameter for the location of the barrows – they are closely connected to the meadow and sometimes the steepness and rise of the riverbank seems integrated in the visual impression of the monument.

The dating evidence on barrows and burials in the Tobøl barrow group is relatively good and allows a general model for the development of the barrow group. During the Single Grave culture and the Late Neolithic, barrows were probably only built at intervals of several generations. After Bronze Age period I the level of activity rose noticeably. It peaked in period II, and there is a slight decrease in intensity in period III.

The prolonged period in which barrows in the area were built with long intermissions gives the impression of continuity in the perception and use of the area and the overall structure of the landscape. This rhythm of activity was apparently broken in period II where the activity level in the Tobøl area acquired an extraordinary and intense character. During four centuries of period II and III, the area was utilized purposefully and intensively for barrow building and as a burial area.

On the north bank of the river the settlement activities change character through time from rather well-defined settlement-sites in the Neolithic to a much more scattered distribution during the time of the barrow building. A large part of diagnostic Late Neolithic and Early Bronze Age artefacts like bifacial flint arrowheads are found scattered over the landscape together with dispersed relatively uncharacteristic flint debitage (Fig. 6). Well-defined settlements are absent; the finds appear to represent relatively fleeting and momentary instances of human activity and traffic. To the south of the river opposite the barrow group a number of more regular Late Neolithic and Early Bronze age settlements have been identified, but apparently none of them rise significantly above the small, quite ordinary norm and no site has so far shown signs of intensive occupation by a large group of people. On the other hand, the density of sites along the river is high, and bears witness to a relatively intense and continuous exploitation of the overall area.

The nature of the settlements, in many ways, contrasts the centrality and concentration signalled by the conglomerate of large, specially constructed mounds from period II and III. The resource-related expenditure of effort at the foundation of the most active central period of barrow construction cannot, therefore,

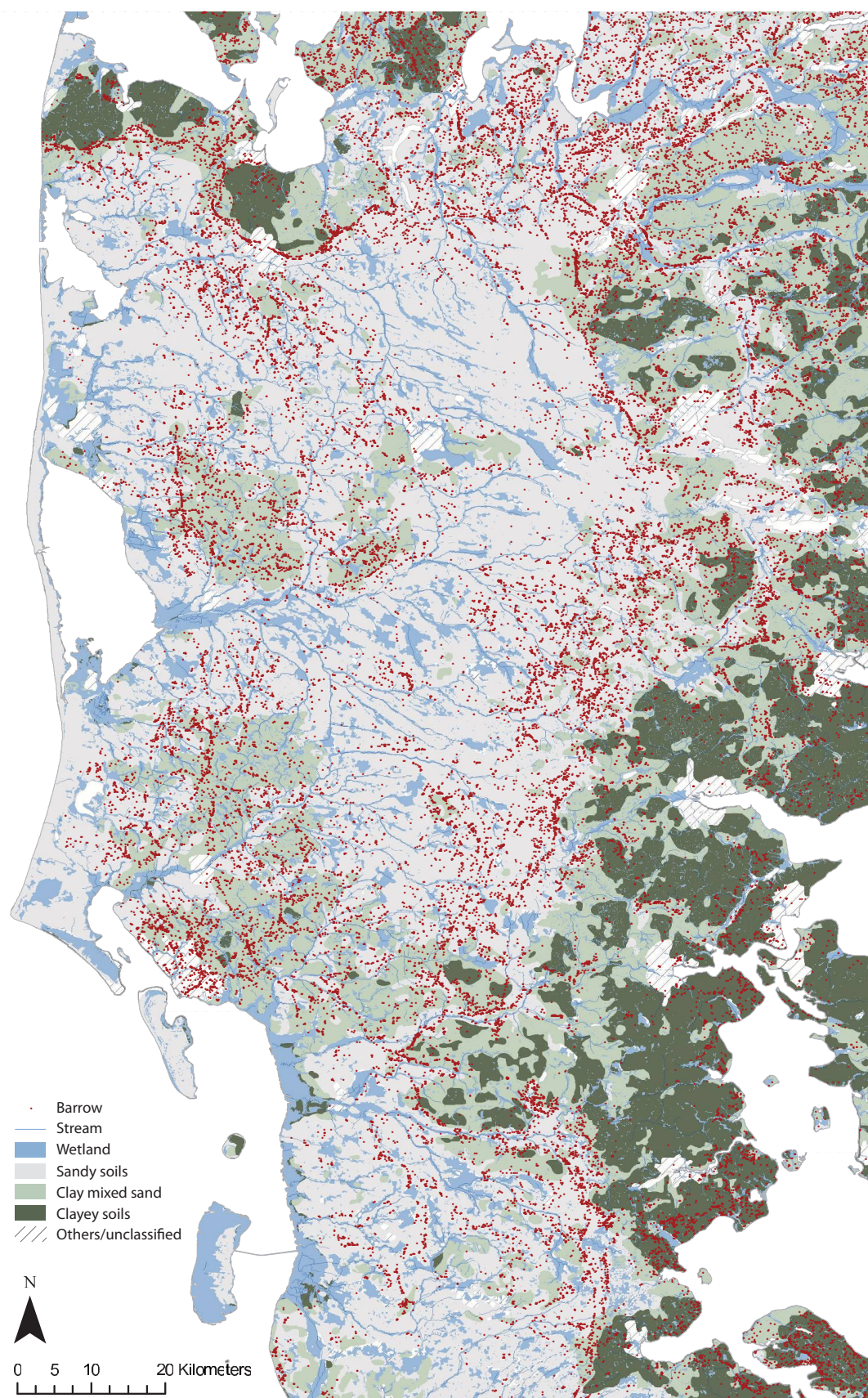


Fig. 3 Distribution map of recorded barrows in western and southern Jutland excluding known megalithic monuments. The map is based on queries in the Danish sites and monuments register DKC from 2006 now accessible on the internet in a new version but with more generalized classifications (Kulturarvsstyrelsen 2008). The majority of the mounds are thought to belong to the Single Grave Culture (2850-2350 BC) and the Nordic Early Bronze Age (1750-1100 BC). The mounds are mapped on a generalized soil map from the Danish Soil Classification (Madsen, Nørr & Holst 1992), and historic wetland areas are digitized from topographical maps, scale 1:20.000, from 1862-1899 (for southern Jutland 1928-1945).

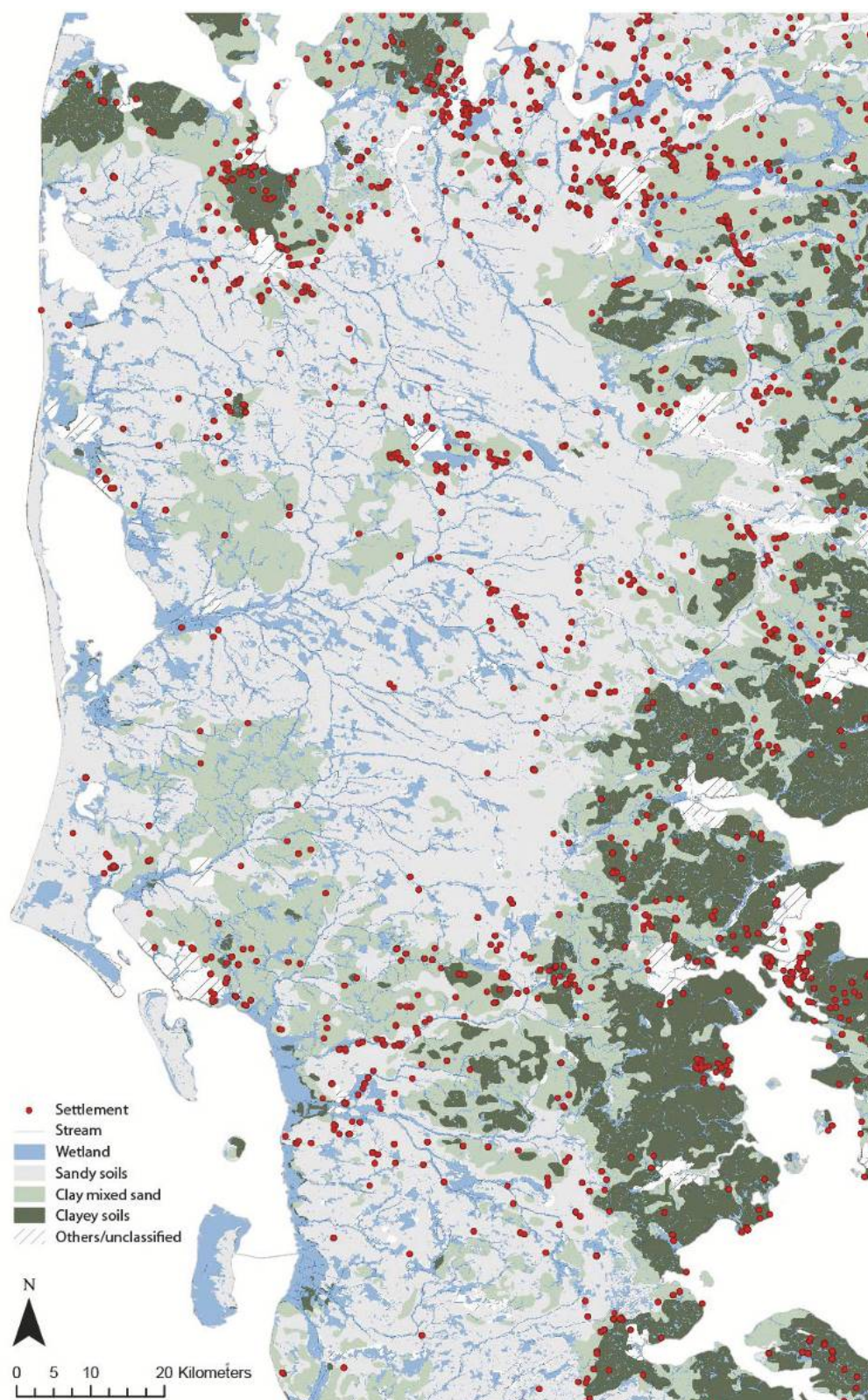
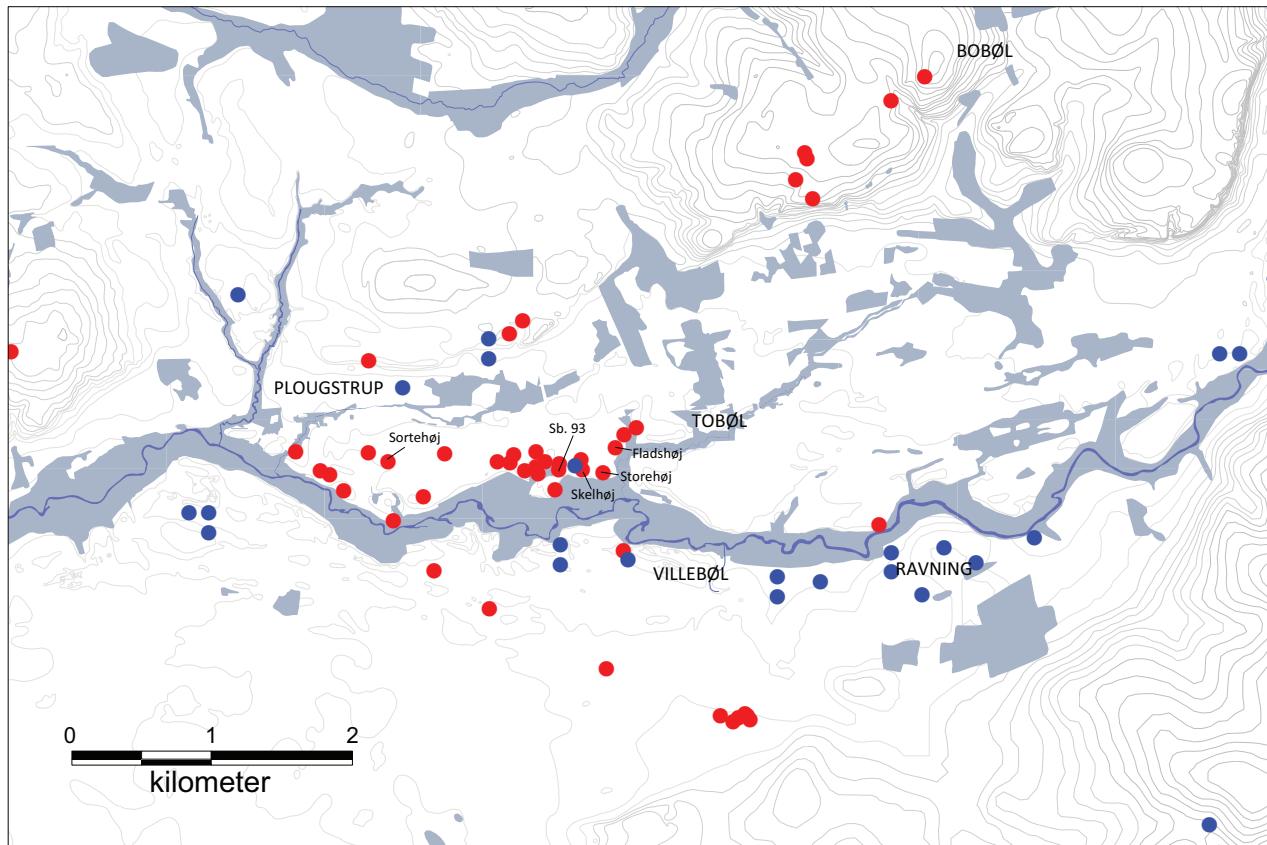


Fig. 4 Distribution map of recorded settlements and settlement indicators from the Bronze Age according to the Danish sites and monuments record mapped on the same background as in fig. 3. The map is based upon queries in the old DKC-database from 2006 and supplemented by queries in the new, more generalized version of the database accessible on the internet (Kulturarvsstyrelsen 2008). The recording is associated with numerous source-critical problems. The individual localities cover everything from large settlements with numerous house structures to dispersed posts or pits. There have been widely varying investigation, classification and recording practices as well as destruction histories in different areas. The map should therefore be used with caution. Still, the overall tendency towards clustering of the settlement in specific regions probably holds. There is a clear tendency to concentrations near clay-mixed sand, which has generally been considered the optimal soil type for the Bronze Age agriculture although there may be some underrepresentation of the clayey soils due to more intense agriculture in historic times (Kristiansen 1978: 174ff; Jensen 1979: 135; Baudou 1985; Kristiansen 1985).

1:50.000



Red: Barrows
Blue: Settlements

Fig. 5 The Tobøl area with recorded barrows and settlements.

be related to one particular settlement alone but must have had a significance which extended beyond the immediate hinterland.

Before the barrow building period the Neolithic land use of the area displays a cultivation emphasis demonstrated by the A-horizons and ard-mark systems preserved underneath the barrows. The overall land-use strategy changes from the Funnel Beaker Culture to the Single Grave Culture and Late Neolithic/Early Bronze Age. This is consistent with the fact that a gradual opening up of the western Jutish landscape appears to emerge from the transition to the Single Grave culture and onwards (Odgaard 2006). In the Tobøl area, this shift is suggested primarily by the marked change seen in the settlement pattern north of the river. The shift also marks the beginning of the barrow building. This must reflect a transformation of the use and significance of the landscape in contrast to the relative stability of the many preceding centuries in this particular area (Holst & Rasmussen 2013).

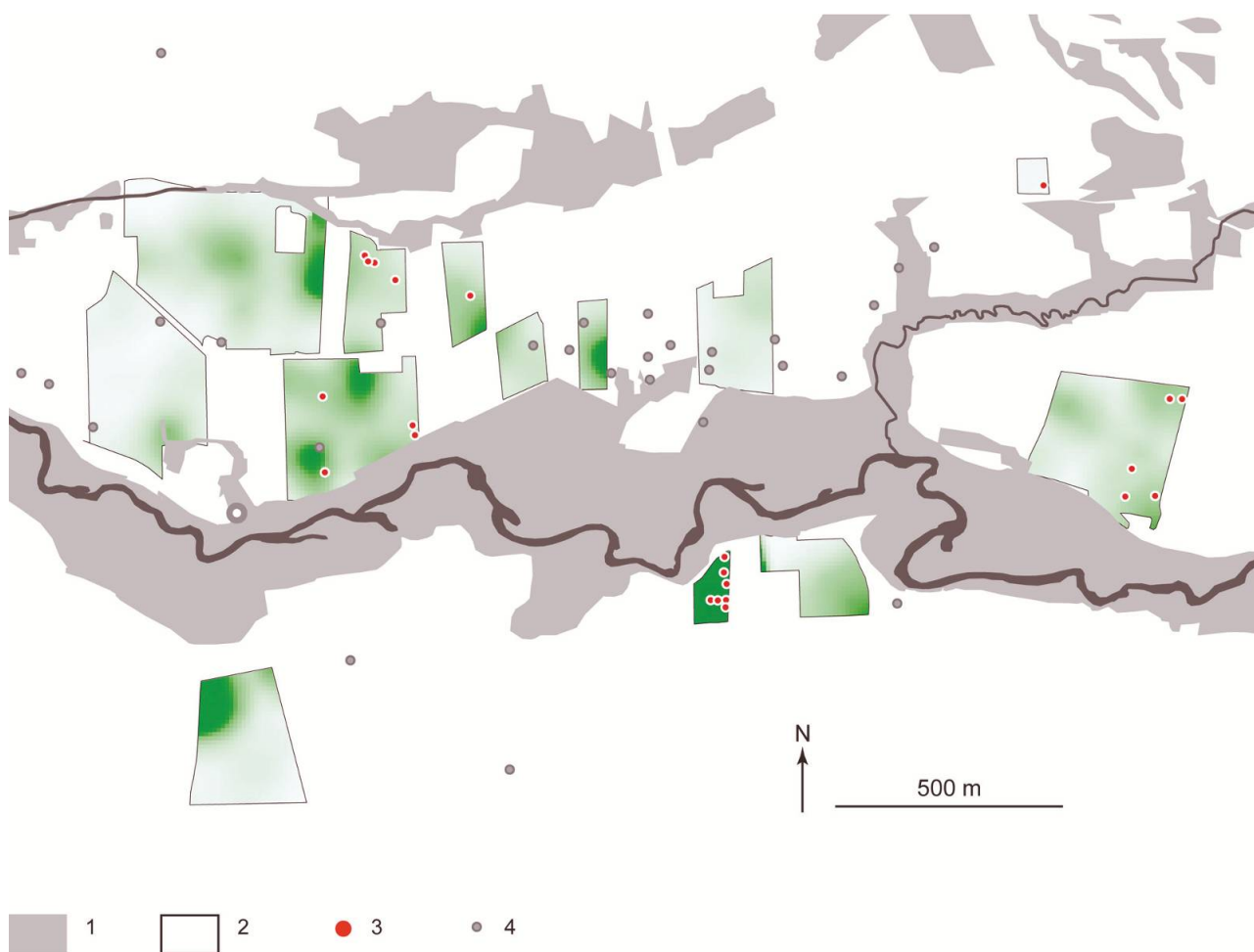
A comparable development took place on the island of Als. Here the settlement structure changed from the Late Neolithic and onwards. A new colonization of land together with the fragmentation of former communities lead to a more dispersed settlement structure in the Late Neolithic and Early Bronze Age (Sørensen et al. 2001).

At Tobøl, information on land use during the barrow building

period is provided among other things by the vegetation layers preserved on the turves in the barrows. The landscape in which most of the barrows of the group were built was open and dominated by herbs and dwarf shrubs rather than trees. The most significant variation in the pollen diagrams is the relationship between heather and the grass-dominated common vegetation (Søgaard & Christensen in prep.). In other words, we are dealing with a familiar landscape of vast areas of pasture in the surroundings of the barrows.

A number of plants indicate that the heath was cut or grazed and quantification of charcoal dust and evidence of the burning of heath plants underlines this picture of a heavily culturally-influenced landscape with indications of grazing pressure and cultivation of the heather grassland (Karg 2008). At the time when intensive barrow construction began in period II, the area was dominated by vegetation, which was well suited to provide turves for the barrows.

The barrows at Tobøl were built on former Neolithic settled and cultivated areas. The land use changed into grazing area during the course of the Single Grave culture/Late Neolithic and seen from an agrarian rationale the barrow building could be regarded as a destructive behaviour. However, there are indications that the production of turf and the need for grazing were part of a shared



Distribution of flint artefacts datable to the Early Bronze Age at Tobøl. Green colours: Flint debitage density. 1) Wetlands. 2) Dry land. 3) Early Bronze Age diagnostic type. 4) Early Bronze Age barrows.

landscape management and that they to some extent could be a combined structure.

At Tobøl the landscape utilization pattern suggests that while crop-fields probably were situated close to longhouses and were plausibly connected to a specific group of people or a family, the grass and heath areas could be associated with a larger community or even regarded as common land. There exists no evidence from Early Bronze age South Scandinavia of divisions of pasture. It does not appear to reflect a lack in preservation, and must represent a very different grazing strategy from the highly structured field and pasture systems from the Late Bronze Age/Early Iron Age also known from western Jutland like Øster Lem Hede and Byrsted Hede (Hatt 1949; Holst 2010: 168f; Vinter 2011). The latter has many parallels in northern Europe, in some areas contemporary with the barrow building period in south-western Jutland. The land use system in eastern England is thus characterized by finds of land division ditches and banks - mostly classified as so-called co-axial field systems even though some structures obviously also are part of livestock management (Guttman & Last 2000; Yates 2007). Likewise, the Dutch Middle Bronze Age landscape is claimed to have been much more structured with domesticated space in terms of fence systems, parcelling and land divisions (Arnoldussen 2008: 439; Bourgeois & Fontijn 2008).

In Jutland, there are so far no indications of such land divisions conveying the impression that the pastures in the landscape of

the barrows lay beyond the land controlled by the individual settlements. Landscape boundaries in the form of field systems and the relatively newly discovered pit zone structures so far appear to be a phenomenon appearing at the very end of the Bronze Age or in the Pre-Roman Iron Age (Mauritsen 2010; Kristensen 2008).

From territories to rights of movement

For obvious reasons attention has been primarily on the intensely settled areas, when it came to explaining Bronze Age spatial organization. Here the territorial concept of landscape was easily applied. The dense settlement entailed a thorough monitoring of the entire land with regular use and movement and often clear intervisibility of the different settlements. Relatively frequent communications between the settlements can also be assumed from the fact that the landscape offered easy transport; at Tobøl on both the river and on the plains along it; at Thy along the coast and partly through the landscape.

The dense settlement concentration is, however, not representative of the entire Jutland landscape. Besides these relatively discrete concentrations, the very uneven settlement distribution entails that there were vast parts of the landscape which lay beyond the intensely settled areas. Still, this did not necessarily imply that this landscape was unexploited. A far from insignificant part of the pollen evidence, which has been given such weight in the interpretative emphasis on the pastoral aspects of the economy,

must belong to this landscape beyond the settlement core areas. The relatively extensive heath and grass indications evident in pollen spectra from both lakes and buried soils underneath barrows indicate that these lands on a general scale were relatively regularly exploited for grassing and presumably with a deliberate maintenance of the heath by burning (Karg 2008; Odgaard 1994).

Based on the available settlement evidence we must expect large parts of this landscape to have been beyond the immediate everyday monitoring of the longhouse inhabitants. The large areas involved imply that the grassing zones often must have bordered on a large number of longhouses over a very broad area, filling the vast gaps between the settlement concentrations. Finally, the relatively dynamic character of the settlement probably also entailed that there was a constantly changing configuration of the social groups with access to the grassing land. In conclusion, the grassing land is best conceived as some form of non-territorialized resource, and probably with limited possibilities for restricting access.

In this way, we may characterize the Bronze Age landscape as zoned, both economically and socially. There were the settlement core areas, which formed densely connected networks with an ongoing covering surveillance of activities. Beyond that, probably with a fuzzy boundary, was a vast, irregularly monitored but, from a pastoral perspective, very attractive grassing zone.

The proposed lacking territoriality does not necessarily imply that the land was unregulated. There may have been strict norms and rules of behaviour in this part of the landscape, but their maintenance would have relied on self-regulation and more or less incidental meetings between the different operators in the landscape.

In studies of late prehistoric and historic commons and outfields the existence of regulations and norms has had a central position, and often the regulations of the common appear to have been formative in the development of fundamental normative principles of the local communities at large, probably due to the frequent problems of deciding rights and obligations in these parts of the landscape and the need of restricting uncontrolled competition (e.g. Hardin 1968). However, none of the historically attested examples stand out as particularly suitable analogies to the Bronze Age landscape. They either concern access to specialized resources in the landscape, to a marginal aspect of the economy, or to well-defined and discrete groups of people sharing an equally well-defined common resource or delimited extent of land. The Bronze Age situation differs in the combination of the grassing land presumably being the primary resource and potentially relatively open and accessible.

The absence of territoriality would allow for different movement patterns in the landscape (Fig. 7). In principle, the herding could occur over large distances, and there may, in fact, have been both social and economic incentives supporting an element of transhumance. That would reduce pressure on local resources within the densely settled areas, and thereby lighten intra-group social strains. It could also maintain a claim to the resources of the grassing land, and provide contact with the other groups utilizing and bordering the areas. It would offer an efficient stock managing strategy by allowing movement of the herd in relation to the most opportune grassing resources, and possibly enable interbreeding between different herds in the grassing land.

The most suitable grassing areas would have been stable and

predictable from a general understanding of hydrology and soil conditions of the landscape, but they were also dynamic depending on climatic variation, previous grassing history and maintenance of the vegetation e.g. by heath burning. There were areas which were generally more attractive than others, but also a constant and partly manageable change, which worked towards spatial exploitation patterns not becoming entirely fixed.

The assumption of transhumance or long distance herding in the Bronze Age also offers a new interpretative approach to the distribution of the barrows, and particularly the marked linear structures. Both landscape position and the environmental evidence from the barrows indicate that generally the barrows were not constructed in the immediate proximity of a settlement, but in the grassing zones of the landscape and built of heath and grass sods procured from the immediate surroundings. The barrows, in this way, refer primarily to the grassing zone and its logic and norms. Given a transhumance aspect to the economy, it is not the delimitation of areas which are important in this landscape but the right to move through, to access the most attractive grassing areas. From this perspective the linear arrangement of the barrows becomes understandable. The major lines coincide with the major dry watershed corridors and connect natural fords at the different major streams and rivers. In this way, they represent optimal pathways in the landscape, and the position of the barrows along them indicates a long term preference for erecting the barrows along these landscape corridors (Müller 1904; Holst, Breuning-Madsen & Rasmussen 2001; Johansen, Laursen & Holst 2004; Løvschal 2011). Similarly, the large barrow groups such as Tobøl are located at the natural fords or at the intersection between grassing land and settlement zones. In this way, the barrows may be seen as emphasizing rights of access, and the barrow building itself, through its wide-ranging assembly of participants in the barrow construction and the extensive utilization of grass and heath sods, becomes a collective affirmation of the rights of the buried individuals, their kin and the barrow builders to operate and move in this land (cf. Gosden & Lock 1998).

The longhouses remained as a form of base for the activities, but with a different pattern of use and in a different temporal mode. The longhouses were the point of origin and terminus of the herding, but they were not necessarily the permanent dwelling and scene of everyday activities of all its members. The number of inhabitants could vary considerably over the year in relation to mobility cycles. Many of their inhabitants could have spent a substantial part of the year away from the house, which could explain the mobility indicators in the flint debitage of the settlements (Eriksen 2007). In this way, the longhouses become a form of reference and assembly place rather than a farmstead in the Iron Age and historic sense.

There would probably have been a relatively well-defined group of people, who referred to the longhouse as a form of home, but the affiliation may have been more abstract and occasional than an everyday cooperating household. The idea of long-distance herding therefore also allows for the existence of basic group identities other than the household such as grazing collectives and herding groups.

Wandering thoughts

So far, the idea of long distance herding activities is very much hypothetical, but in our opinion it provides a strong alternative to the territorial models, at least for south-west Jutland. It offers an explanation of overall settlement and land-use patterns, and

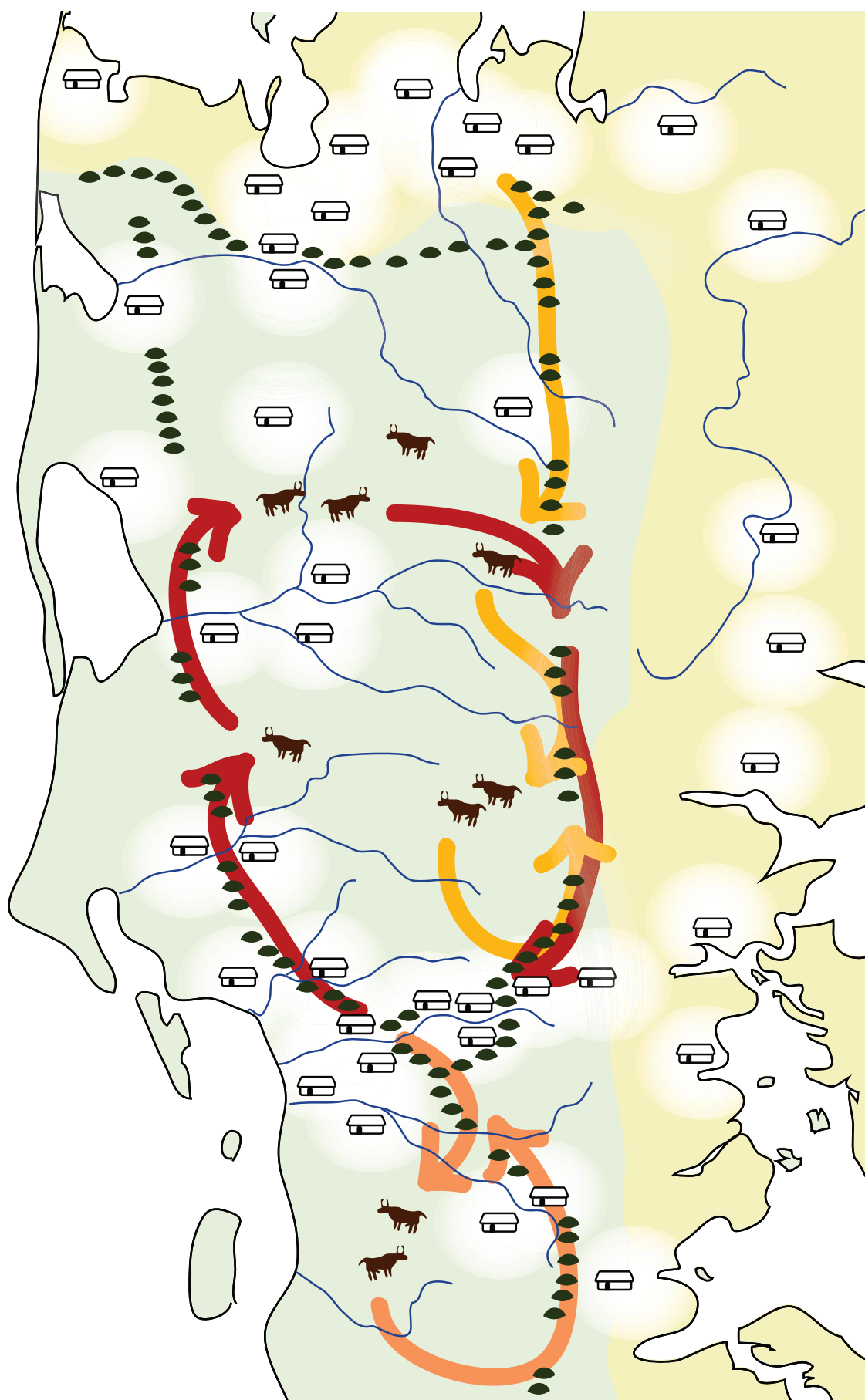


Fig. 7 Hypothetical and generalized model of herding movement patterns in the southern and western Jutland landscape in the Bronze Age.

it provides a different way of thinking about the Bronze Age landscape and social organization. Mobility becomes an essential part of everyday life. Thereby the connectedness of the Bronze Age world, which has been emphasized in numerous studies, need not be solely conditioned on exceptional long-distance travels of prominent individuals, but rather they could rely on a culturally and economically deeply embedded general mobility. In this way, we end up with various forms of mobility, which are emphasized differently in different contexts. The collective waterborne voyage is prominent in the iconography, the location of the burial mounds to a large extent reflect the common terrestrial movement patterns and the individual journeys and long-distance personal alliances are occasionally recognizable in the burial assemblages. It is in this complex of short and long distance movements and relations that the Bronze Age connectedness was shaped.

As for the landscape, the long distance herding model alters perceptions of distance and margin. There is no longer a clear concentric arrangement of the familiar and the foreign. There may still be a distinct zonation relying on varying utilization practices and possibilities of movement and monitoring. It is, however, based upon a complex classification of the landscape referring to both settlement proximity and overall traffic flow and permeability. This allows for a new approach to the interpretation of both barrow lines and potential assembly places detached from settlements, as for instance the fire pit areas (Kristensen 2008; Mikkelsen 2011).

The hypothesis of long-distance herding activities may be used to propose alternative interpretations of Bronze Age landscape organization and perception. However, to substantiate the hypothesis attention to the often very vague activity traces beyond the settlements becomes crucial as does the targeted effort to achieve coherent and detailed landscape models for specific periods and regions. Over time this may enable us to describe in more detail a Bronze Age landscape, which was fundamentally different from the Iron Age and historic spatial organization.

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FIELDS

Chris Gosden

Abstract: The Middle Bronze Age in Britain (c. 1500 - 1100 BC) is the point at which many areas in the south were enclosed on a large scale. We label such enclosures 'fields' and see this as a considerable change in agriculture, perhaps even representing a much-delayed Neolithic Revolution. From the vantage point of the present areas enclosed by banks and ditches look like fields. For people in the Bronze Age in Britain, who in the past had lived in relatively open landscapes with monuments, they may not have had connotations of possession or have been primarily for growing plants and keeping animals. In this paper I shall explore the newly emerging evidence for so-called 'field systems' and explore a range of possibilities as to what they might have been, including some form of monumentalizing of the landscape, in a way that might have echoed earlier monuments. I shall explore the evidence for agriculture in the Middle Bronze Age, as well as the distributions of artefacts. The article very much echoes the spirit of enquiry pursued by Kristian Kristiansen, for whom the Bronze Age has been a period not to be interpreted too easily or using modern commonsense views.

Keywords: Fields, monuments, agency, agriculture

Fields probably emerged at the end of the early Bronze Age in Britain, in places like Dartmoor, becoming relatively common relatively rapidly across southern Britain in the Middle Bronze Age (Yates 2007). At the same time large monuments, such as henges and stone circles, went out of common use. The change from monuments to fields seems like both a secularization and a settling down. Fluid and mobile groups in the Neolithic and Early Bronze Age negotiated and maintained some form of group cohesion by periodically coming together to construct or change monuments, to feast, to exchange, to deposit materials or to bury their dead (Bradley 2007). The demands of cosmological relations created and cemented human ones. Around 1500 BC, it was thought, this changed rapidly. Field systems were constructed and small, enclosed settlements created. The world established in the Middle Bronze Age appeared more stable, familiar and mundane, with houses, cows, sheep, wheat and barley. The reasons given for such changes were broadly economic: fields represented the move to short-fallow, plough-based agriculture in contrast to long-fallow hoe-based systems in the Neolithic and earlier Bronze Age (Barrett 1994: 147-9). Land ownership and more regulated modes of kinship also appeared. The ultimate motivation for the regularizing and intensification of agriculture was the need to fund the increasingly important prestige goods exchange, primarily involving bronzes (Rowlands 1980).

A number of people have critiqued such a scenario. Brück (2000) has thrown doubt on the idea that the fields and settlements of the Middle Bronze Age come into being due to intensification. Rather she sees the small settlements after 1500 BC as deriving from social fragmentation into a series of local household based groups, who felt the need to organize their space carefully and to engage in exchange to maintain necessary links to other household based groups. Fields and a possible intensification of agriculture are a response to this fragmentation (Brück 2000: 292-4).

In what follows I would like to reinforce and develop this critique, arguing in the process that the differences between the world of the Neolithic and Early Bronze Age and that after 1500 BC have been exaggerated and misunderstood. My argument will be that there is mobility from the Neolithic to the Bronze Age and beyond. Throughout this whole period there were relatively small scale and volatile populations with periods of both rapid increase and decline in numbers, so that areas were not always heavily occupied

in all periods, there being episodes of abandonment and then re-occupation (Hill 2007). The nature of human relations in such a changeable world is hard for us to understand, as is that between people and the land. A series of now commonsense assumptions concerning ownership, rights and maximization of returns from labouring on the land did not necessarily hold in the Bronze Age. Relationships of all kinds may have been less pragmatic and more suffused with the sacred, so that places had deep historical and contemporary significances, but not those that we can easily understand. Also human relations with their significant others are poorly understood: links to domesticated plants and animals varied through time and over space and cannot be glossed in singular terms, such as agriculture. Huge amounts of new data are becoming available on fields, settlements and trackways, often through developer-funded archaeology, and concerning objects through the Portable Antiquities Scheme (<http://finds.org.uk/>). Now is a moment to take stock of the new information and not to rush into interpretation too easily. What follows is a preliminary ground-clearing exercise, rather than an attempt to produce a new structure of interpretation. I shall concentrate on fields to help focus my argument.

Kristian is one of the great synthesizers of archaeology and it is appropriate, and probably even necessary, to approach a subject such as the study of fields and agriculture in a holistic manner in a volume in his honour. Kristian is best known for his work on exchange, mythology and power, but underlying these issues has been a concern for agriculture and subsistence. A political economic emphasis, in which Bronze Age chiefdomships were underpinned either by war and competitive exchange or agriculture and slightly less competitive exchange, found full expression in two major books in the same year (Kristiansen 1998; Kristiansen & Rowlands 1998). Together these sketched a trajectory from territorial chiefdoms in the Neolithic to theocratic Bronze Age chiefs. In the earlier period slash-and-burn agriculture underpinned common tasks of forest clearance and monument construction in which the heads of lineages were descendants of founding ancestors carrying out ritual on behalf of the whole community (Kristiansen 1998: 90-1). The Bronze Age saw the start of competitive segmentary lineages, joined together as tribes, in which pastoralism and the control of long-distance prestige goods exchange were the foundations of power (Kristiansen 1998: 91).

A considerable change of emphasis is found in Kristian's more recent voyage into the Bronze Age world, which has concentrated on knowledge, meaning and symbolism with a tension between ritual and warrior chiefs (Kristiansen & Larsson 2005). A combination of a processual and post-processual approach is found in the most recent major work with Tim Earle (Earle & Kristiansen 2010) in which a concern with political economy is married to issues of material agency and power.

Kristian's work taken overall has provided one of the most major and sustained examinations of Europe's later prehistory and early history. His recent emphasis on the Bronze Age as a mobile world, as one of travellers and the flows of materials and information chimes clearly with my argument. My view of course is more parochial, looking only at southern Britain and more localized sets of relations between people and things.

What is agriculture?

'... the people using these areas were simply trying to become better farmers ...' (Fowler 1984: 30). '... field systems cannot be considered a proxy indicator for the importance of arable agriculture' (Sharples 2010: 43). It might seem obvious that fields were created as an agricultural system, but here there is considerable disagreement as these two quotes show.

Agriculture was not an invention of any age, but is rather part of a slowly and constantly evolving set of practices involving domesticated plants and animals, digging sticks or ards, fields, and common land. It might appear as if agriculture developed in the Bronze Age in places like southern Britain as this is when large-scale field systems are in evidence for the first time (Fig. 1). From Cornwall to East Anglia and at least as far north as the Severn-Humber line field systems are found from around 1500 BC, although some of them may start earlier (Yates 2007). In their various forms fields all present considerable human effort expended in dividing up the landscape more or less deliberately. What reasons could there be for such an investment other than to create much more organized and intensive agricultural systems?

Yates (2007) has certainly concluded that lowland fields represent an intensification of agricultural effort and production to create wealth in stock, primarily cattle, which can be exchanged for valuables travelling long distances, such as bronze and amber. Yates (2007) seeks and finds correlations between fields and concentrations of metalwork in areas like the Thames valley. Links between agriculture and bronze exchanges are causally connected in the 'staple finance' model of Earle (2002) in which elites attempt to control 'the ownership of and restricted access to productive resources, most importantly land' (Earle 2002: 61). Food is accumulated and redistributed, with such redistributions allowing for the control of even more valuable items, like bronzes. It follows that field systems in places like Dartmoor were planned from above (Earle 2002: 54). There are a number of problems with this model, not least that the full range of crops for an integrated short-fallowing system, like peas and legumes which fix nitrogen back into the soil, only become common in the Iron Age. Indeed, in places like Dartmoor there is currently little evidence for highland cereal cultivation, only partly accounted for by the lack of excavation. Evidence for storage of cereals and other food is also scant in the Bronze Age. In many field systems, such as Perry Oaks, little metal has been found (Lewis et al. 2010). Both Blackpatch on the South Downs (Drewett 1982) and South Lodge on Cranborne Chase (Barrett et al. 1991) produced small quantities of carbonized grain and lacked storage facilities, and the

lynchets linked to both sites were small and might indicate short and intermittent cultivation (Sharples 2010: 41). The East Anglian fenlands produced so little evidence for crops that Pryor (1998) favours sheep management for the field systems there, although the bones from these sites are dominated by cattle.

We need to think more critically about some of the assumptions lying behind our analysis of prehistoric farming practices. One important and general assumption is that people developed and directed farming systems with little influence from other species. Elsewhere (Lock et al. 2005) Gary Lock and I started to draw on studies of sheep to think about the geographical setting of the Iron Age hillfort of Segsbury. It has been shown (Gray 2002) that ewes become attached to a particular tract of land, known as 'hefts', and young ewes are socialized into this attachment through a process known as 'hefting-on'. The hefting of sheep makes them important mediators between people and place. Shepherds on the present Scottish borderlands develop a work routine based around one or more contiguous hefts and these in turn influence the broader organization of the landscape, the positioning of farms and so on (Gray 2002). Such work derives from a more general interest within the social sciences on the relationship between people and animals (Agamben 2004; Haraway 2003) and also in developing a more entangled notion of people and their world (Connolly 2011; Ingold 2011). Obviously many factors are influential and we cannot assume any direct analogy between the exact behaviour of sheep in the present and in the Bronze Age.

Nevertheless, the general principle pertains: an agricultural landscape will not be designed solely around the aims and desires of people alone, but will instead emerge out of a mass of relations between people and other species. Once one takes the patterns of behaviour of other animals into account (Lorimer 2006), that is once we start to develop animal and human geographies, then the mix of influences proliferates. Longer term cycles may also have arisen from the combination of plants and animals. Amy Bogaard and her co-workers have been developing the notion of 'nutrient sinks' in which the effects of long term manuring on particular pieces of land may have altered the soil chemistry, making soils more beneficial for arable use (Fraser et al. 2011). Soils themselves are historical products, changing under human influence and then acting back on the behaviour of plants, animals and people. Such long term causes and effects could not have been predicted by people first combining plants and animals, being emergent properties of the system we have come to call agriculture.

Fields: their uses and histories

At least four types of Middle Bronze Age fields can be recognized in southern Britain at present. In many lowland areas, from the Midlands, East Anglia, the Thames valley and its various tributaries are found large-scale ditched systems, where single or multiple ditches enclose square to rectangular fields, with double ditches defining either hedges or trackways between fields (see Yates 2007 for the best overview). Many of these systems were coaxial, with a dominant axis just west or east of north. In amongst the coaxial fields are so-called aggregate ones, where more haphazard looking fields lack a dominant axis. There are arguments as to whether aggregate field systems came later than coaxial ones, filling in the gaps between the larger systems (McOmish et al. 2002: 56) or whether coaxial forms add order and scale to earlier aggregate forms (Lewis et al. 2010: 136-9). Different histories might have unfolded in different areas, of course. There are indications that individual components of these



Fig.1 Large scale field system in southern Britain, an example from west of Bodmin Moor, Cornwall.

systems – ditches, banks, hedges and fences – were deployed from the late Neolithic onwards, but in a piecemeal fashion. Such components came together to form new large-scale wholes around the middle of the second millennium BC.

The second major type of fields were found mainly on the chalk uplands of southern England. Here fields are demarcated by

lynchets, which are banks formed by the movement of soil down hill due to ploughing, with the soil building up against some obstruction, such as a hedge or a fence. The largest survey of such systems was that carried out on the Salisbury Plain Training area (McOmish et al. 2002; see also Fowler 2000 and Gingell 1992 for neighbouring landscapes). On Salisbury Plain a large number of systems were mapped, the largest up to 1500 ha in

extent. The fields are preserved by being within the military area of Salisbury Plain which has not been ploughed in modern times. Field systems probably extended into lowland areas where subsequent agricultural practices have made them more difficult to find and investigate. Impressive though the mapped areas of fields are, they most likely represent only part of what originally existed.

The lynchet systems carry within their form evidence of their creation: they must have derived from the action of ploughing. Arable farming was important during the Bronze Age on the downs, although presumably in combination with stock rearing. For the lowland ditched systems the assumption is that stock – both cattle and sheep – were more important than cereal cultivation. Here the work of Pryor (1996, 1998), based on his Fenland excavations, has been especially important. Recently Evans (2009) has thrown doubt on this, saying that some of the droveways, defined by two parallel ditches, might have formed banks for hedges. At other sites such as the Newark Road compounds (Evans 2009: 44) parallel ditches might have been an outcome of the process of adding ditched enclosures one to another. In any case, Evans feels there are not enough droveways for the areas of the fields being served. I would add that the upland fields of lynchets show little evidence of trackways running through them.

The last two sets of field systems are more limited in occurrence, but are important both in the history of investigation of field systems and also for demonstrating regional variability. On the moorlands of Dartmoor and Exmoor there are extensive sets of land divisions, especially in the former case, where they take the form of long lines of granite boulders. Known as reaves, these divide the moor into large blocks, with smaller sub-divisions. It is likely that the stone component was laid along fence or hedge lines, which together would have formed effective barriers. These were strongly coaxial systems, perhaps originally extending down onto lower ground (Fleming 1988). Finally, in Cornwall extensive areas of aggregate systems existed, where walls defined irregular blocks of land (Herring 1998). These systems are unusual, usually existing in and amongst large scale coaxial fields.

I have looked so far at the spatial layout of these four systems, but their histories are also important. One key, although intractable, problem is whether coaxial systems were laid out more-or-less at one time to a plan, or whether they grew in a more piecemeal fashion over time.

The scale and coherence of field systems provoke important questions. How far do fields represent planned landscapes? If they were planned, can this only result from considerable control by an elite? The most sustained critique of the idea of fields as being under central control has been by Wickstead (2008). A spectrum of views has existed on planning, possession and control ranging from the idea that land was controlled, if not owned, by elites (Earle 2002) to a more communal view of ownership put forward by Fleming (1988). For Fleming three levels of social organization existed – at the highest level was the community which had overall responsibility of the coaxial reaves and the common grazing land. At the lowest level were householders who were both a biological and labour unit. Householders were clustered into neighbourhood groups, linked by kinship and exchange, so able to pool both labour and resources (Fleming 1984: 11-12). For Fleming, the tension in Bronze Age society, worked out through the reaves on Dartmoor, was the fragmenting tendency of the householders on the one hand against the integrating forces of wider society. Land division and tenure, organized through these three social levels, was a means of working out contradictions, in a manner that

allowed the households to exist, but which also held the broader group together (Fleming 1985: 142). Some uncertainty exists as to whether the full system of reaves was laid out across the moor to a grand plan or whether reaves emerged more gradually, albeit following some overall conception.

Wickstead is generally in sympathy with the communal and non-elitist notions that inform Fleming's analysis, but is critical that his view is too static and synchronic. Johnston's work incorporates change, seeing the reaves emerge piecemeal over long periods, with new lines of reaves orientated on old monuments and houses (Johnston 2005). Taking time and change more seriously led Wickstead (2008: ch. 7) to consider the principles and processes of laying out reaves and enclosures. Through complex forms of measurements and simulation Wickstead (2008: 135-9) determined that there were no overall units of measurement for the reave system as a whole, but there are subtle indications of local units, which derive from the fact that blocks of roughly equal width were laid out which then underwent repeated sub-division into widths which were a standard fraction of the whole. Fields emerged because they mediated a series of relations between different human groups and between people and other species. Not only did they emerge, but they kept on emerging, in that fields require work to maintain their form whether by clearing out ditches, as they are filled by erosion, or maintaining the lines of stones that compose reaves. Fields appear as primarily spatial phenomena, dividing up the land, but this view is partly due to the success of our mapping technologies. Fields were temporal too, unfolding in time and helping to bring out new sets of values which did not easily map on to those that we hold as self evident. As with agriculture, fields may have had emergent properties.

Form and Flow

Field systems impress us initially by virtue of their form. The degree of organization and labour investment manifest by the English landscape requires explanation, now that we are starting to become aware of scale. Coaxial field systems which can easily look planned or at least well co-ordinated may seduce us into quick explanations. However, Ingold (2011: ch. 17) has warned us that we should not be seduced by final forms. A basket does not derive from a mental template in the mind of the maker, which results in pre-determined form. Baskets rise up through the flexibility or tension in the materials, the skilled forces exerted by the hands and body of the maker, for whom the rhythms of weaving allow for both pattern and improvisation. Our mapping technologies allow us to think of field systems as fixed and finished, but careful investigation allows for flows of digging, refilling, cleaning out or sedimentation to the top. And if they were not markers of control or property or an inherent part of a fully-fledged agriculture, then they need more thought.

Issues of what fields represent also raises questions about the nature of community, which then takes us to consider other aspects of the archaeological evidence, such as settlements and house structures. A consensus is emerging (Brück 1999; Sharples 2010) that houses were replaced more often than they need have been for functional reasons. Experimental work on Iron Age houses, such as the reconstruction of the Pimperne Iron Age house at Butser experimental farm, showed decay to be slow and not threatening to the structural integrity of the house (Sharples 2010: 223). Such houses could probably have lasted for generations, but archaeological evidence indicates that they were quickly abandoned, with rebuilding either on the spot or at some distance from the earlier house. This is a pattern that seems to hold for

the period from the Middle Bronze Age to the end of the Middle Iron Age, that is just over a millennium, with the evidence for the Late Iron Age being less clear. Such abandonments raise the possibility that they occurred at the death of a significant inhabitant, although we have to beware of too easy a link between house and household.

That being a possibility, the discrepancy between house numbers and the numbers of fields is very striking. Sharples (2010: 192-7) provides a very useful survey of houses from Wessex – see Table 1. The data vary in range and representativeness, as in the late Bronze Age 57 houses are found at two sites (Reading Business Park with 35 [Moore & Jennings 1992]; and Shorncote Quarry with 22, [Hearne & Adam 1999]) and in the early Iron Age where a substantial proportion of the total come from Danebury (Cunliffe & Poole 1991), Hengistbury Head (Cunliffe 1987) and Winnall Down (Fasham 1985).

However, the main point I am making, albeit somewhat tentatively, is the discrepancy between the numbers of houses and the numbers of fields where these both exist in the same period. It is worth comparing the total numbers of houses known in Wessex for the Middle Bronze Age (85) with the areas of Bronze Age field systems such as that on Orcheston Down (McOmish et al. 2002: fig. 1.17) where there are many more enclosed spaces (fields?) than houses in one relatively small area of the Wiltshire chalk, where the fields also abut a second, probably later, set of fields. See Table 2 for areas of field systems on Salisbury Plain. It is hard to count fields within such systems, due to uncertainties of preservation and whether all enclosed areas were fields.

Complex systems of fallow require more fields than there were in use at any one time, although I have above expressed doubts as to whether complex fallow existed for the Middle Bronze Age due to the absence of the full suite of crops needed.

The sheer number of fields raises the possibility that just as houses were regularly abandoned so were fields, possibly on the death of the person who created them. As we have seen, a distinction is often made between aggregate field systems, which start from a point and radiate out through the addition of new fields and coaxial systems which exist along particular axes, being possibly laid out at one time. If we are looking at the abandonment of old fields and the addition of new ones, both systems might have been united in their accretive processes, the difference being that some were added to along axial lines and others more apparently haphazardly. In either case, fields might represent genealogy mapped onto the landscape and in axial cases there being a cosmological aspect through following important directions.

Field systems certainly exhibit complex histories. For Orcheston Down on Salisbury Plain the fields at the centre of the system are squarer in shape, with those on the outer edge being more rectangular and linear. With these latter fields, original internal divisions might have been ploughed out later (McOmish et al. 2002: 54). The same may also be true on Upavon and Thornham Downs (McOmish et al. 2002: 56). In excavated instances long-term histories are even more apparent, although hard to understand. At Perry Oaks, in excavations in advance of Heathrow Terminal 5, up to nine settlement areas and ten trackways were recognized, so that it is possible that the landscape was divided into blocks with one settlement in each (evidence on settlements is poor, with few sub-surface features remaining) (Lewis et al. 2010: 135-6). The start of the laid out landscape might have been Farmstead 3, possibly established 1700-1600 BC in a large

Table 1 Numbers of sites with houses in Wessex and the number of houses (data from Sharples 2010: 192-7).

<i>Period</i>	<i>Number of Houses</i>	<i>Number of settlements with houses</i>
Middle Bronze Age	85	24
Late Bronze Age	106	13
Late Bronze/Early Iron Age	32	10
Early Iron Age	51	10
Middle Iron Age	91	12

Table 2 Areas of some Bronze Age field systems on Salisbury Plain (data from McOmish et al. 2002).

<i>Moddington Down</i>	<i>526 ha (1300 acres)</i>
Rushall Down	607 ha (1500 acres)
Netheravon Down	202 ha (500 acres)
Milston Down	100 ha (247 acres)
Figheldean Down	1497 ha (3700 acres)
Longstreet Down	971 ha (2400 acres)
Total	3903 ha

d-shaped enclosure within a set of aggregated fields. Trackway 1 connected to Farmstead 3 respects Neolithic monuments, passing through the gap in cursus C2, rather than cutting across it. Trackway 1 might have been a pathway in the Neolithic and there are hints that ditches defining this trackway might have originated in the Neolithic (Lewis et al. 2010: 150). We must be wary of creating too disjunct a history, separating the Neolithic and Bronze Age radically. The aggregate fields in which Farmstead 3 sits may pre-date the coaxial systems to the east. These in turn seem to develop from south to north with trackways formed initially of interrupted ditches, becoming more continuous to the north (Lewis et al. 2010: 139). Coaxial systems look singular, but it might be that repeated actions following particular directions give the eventual impression of a planned system. However, the digging of individual sections of ditch might commemorate special events, such as the death of individuals of some importance. Elsewhere and later in the history of the Perry Oaks fields considerable evidences of change occurred, such as waterholes being dug through silted ditches and a palisade might cut off part or all of a trackway (Lewis et al. 2010: 140, 161). Wickstead's (2008) work on measurement, mentioned above, hints at the possibility of the local growth of field systems on Dartmoor. Politics were worked out through the landscape which was a key aspect of human negotiations.

Discussion

Fields sit at a point at which a number of our key uncertainties about the past meet. We do not know what fields were used for in any period, in terms of the combinations and proportions of plants and animals. We also do not know their cultural significances. Was land owned or at least controlled by individuals or some form of group? Did such control or ownership lead to large-scale planning of enclosed landscapes? Or were fields genealogies materialized, commemorating both people and animals? The evidence is still relatively new and complicated and we should not come up with a complex and complete model of what they represent too quickly or too finally.

I have argued here that we need to disaggregate many relations. We must be careful about using agriculture as too singular a term when we are looking at changes and relations between people, plants and animals. The nature of human communities is also not clear. Houses near each other may not have been in contemporary use, so might not represent a settlement, but instead might have accreted over time, giving places complex histories. The contrast between a fluid and mobile Neolithic and Early Bronze Age and a stable, settled later prehistory has been overdrawn. Any mode of engagement with the landscape will derive in some manner from previous long-term histories, so that Middle Bronze Age fields used components, such as hedges and ditches, which probably derive from the late Neolithic. But also movement around the landscape following particular directions was of importance in the Neolithic and some of this movement may have been formalized and channeled in the Middle Bronze Age, as the Perry Oaks example shows.

This is a chapter of questions rather than answers, as the latter will derive from empirical investigations of the mass of land divisions now becoming evident to us. That these answers will implicate the negotiation of values within a broad realm that includes (minimally) people, artefacts, plants, animals and landscapes is very much in tune with Kristian's recent work. For Kristian the Bronze Age was mobile with people, ideas and materials moving ultimately between the Near East and Scandinavia. The contrast between a mobile Neolithic and a settled Bronze Age can clearly be overstated. Human societies are never static, so the challenge is to understand various forms of mobility. Field systems give an impression of fixity, but actually provide the basis for new dimensions of mobility and motility. Kristian has long alerted us to this basic condition of Bronze Age life, with new evidence reinforcing this impression of movement and provoking us all to novel thought.

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THE NATURE OF FOCAL PLACES

Joel Berglund

Abstract: This article discusses focal places: their definition, nature and the different levels at which such places exist. It goes on to consider focal places in the Arctic world, specifically Greenland, for both the indigenous inhabitants and the medieval Norse settlement.

Keywords: Greenland, Arctic world, natural places, remembrance, Dorset Culture, Thule Culture, Norse

What is a focal place? The answer to this question should be simple – that is, by the concept of focal place we mean a place on which attention is focused. In other words it is a matter of a relationship between a human and the landscape. The crucial element here is ‘relationship’, which is the linking element and which opens up innumerable possible determining factors depending on time and people. The place is important because it is where ‘something’ is physically rooted. But this ‘something’ is transitory; it only exists as long as people live who know about it. ‘Focal place’ is related to memory and the passing on of knowledge or tradition from human to human. Time is important for how long something remains a focal place; it loses content when memory of its meaning disappears, and it simply becomes a place again (Tilley 1994:27). Yet it is also possible for the place to shift its focus when the memory has gone. For example, the megalithic graves of the Neolithic, the great barrows of the Bronze Age in the Nordic countries, changed their status and in the popular worldview became places for supernatural beings like trolls, pixies and elves. Then, in our own time, against the background of archaeological investigations, their essence as magnificent prehistoric burial places was rediscovered.

One can also ask the question “Why do focal places exist?” or “Why does humankind always have a need to root its emotions and manifest itself in the surrounding world?” The world in which we live consists of concrete things, the tangible; but to this we must add the metaphysical, which is usually interpreted in terms of emotions or so-called instincts. Such an instinct is the religious dimension, which, whether we like it or not, is in some sense embedded in each of us, and finds various expressions (Sløk 1960:11). What they all share is that this dimension is often associated with the physical world in the form of a focal place, for example a church, mosque, temple, graves, monuments or special natural formations.

Whether in the remote or recent past, focal places had a beginning, someone constructed them. Among other things, their motives were connected with the power and control exercised by those who could interpret the place. It is common for both tragic and happy events to be marked by commemorative artefacts, or for statues to perpetuate their memory, and the place thus becomes a focal place. At the national level, there is a need for such memories to underpin solidarity or a sense of community – and at the private level there is the need for a place in a burial ground to secure what has gone into the memory. Focal places may be places where something took place, for example a battle; there is no lack of these throughout the course of history, and they are still being created. However, the memorial may also be moved from the place

where the event happened to another place, for example when an event occurred at sea.

It is important to note the ultimate meaning of the word ‘place’ (Norberg-Schultz 1999: 91). We are always in some place. There may be differences in how the place looks; it may be a landscape, or an urban environment, but it is a place. Humans find a place, settle, and events take place, they happen. Nothing happens without reference to a place, abstractly or concretely; in short, the place is an integral part of human existence (Tilley 1994:26). The Norwegian architect and phenomenologist Norberg-Schultz has identified three fundamental human needs relating to ‘place’:



Fig. 1 The pixies took over when the knowledge of the true nature of the Neolithic structure was lost. Ink drawing by Niles Skovaard.



Fig. 2 The memorial in Moscow for the Russian submariners who perished when their submarine, 'Kursk', was wrecked in the waters of the Barents Sea in 2000. Photo: Joel Berglund.

orientation, identification and memory. He calls this 'place use' or 'being-in-place', and all three needs are closely related to the concept of focal place (Norberg-Schultz 1995:29).

If one disregards churches and other religious cult sites that still function in modern society, focal places today seem exclusively to be places where something has happened, where something is remembered; but older sources can tell us of a time when nature was animate or had a soul. This opens up the possibility of the landscape as a heterogeneous entity of which both large and small parts can be focal places (Burçin 2003:19).

Focal places can exist at different levels; they may for example be personal or public, they may be of larger or smaller dimensions, they may be cultic or memory-bearing. They may be symbolically charged or ritual landscapes that supply this with focal places like waterways, special geological formations, or simply places where something happened, made permanent through myths and rituals. One variant is the mental landscape that only exists in the mythical narrative. Moreover, it is worth adding that the structures that humans add to the landscape such as temples, churches, settlements or other things give the landscape a special meaning: as the inhabited landscape, where mankind has found a place, has conferred names and has thus made the landscape familiar and created order.

The oldest mythological sources we know speak of the relationship humans had with the surrounding world, with nature, and it is precisely the function of mythology to explain how things are

interrelated (Sløk 1960:130; Tilley 1999: 23). We see that one important feature is that what one sees is not always what it seems to be. Components of a landscape can conceal dark forces; it may be a place where good as well as evil forces are at work, which one must approach with caution, and such caution means among other things that it must be handled ritually. That this is not just something belonging to the remote past can be seen in Iceland, where for example a certain lava formation must not be disturbed by road-building since it is considered to be the dwelling of elves, and so great is the respect for this that one must either move the rock or build the road around it (Traustadóttir 1998:151-164). One can further wonder how much is in earnest or simply done for fun when travellers today throw coins in the Trevi Fountain in Rome.

Focal places may be small or large or even blasphemous. Today large focal places like the Acropolis in Athens are mostly tourist destinations witnessing a great past, but in at least one case a large site with ruins was used to underline the antiquity and power of a modern regime. In 1971 Persepolis, which was founded by Darius I in the sixth century, was the main staging ground for the 2,500 year celebration of Iran's monarchy.

In Afghanistan we have an example of a focal place that became blasphemous as a different religious group came into power. Bamiyan was a flowering Buddhist centre in AD 400 and during this time two giant Buddha figures were erected. As the Taliban took over after years of war the Buddha figures were considered a threat to the ruling fundamentalist interpretations of Islam, and the figures were consequently destroyed by artillery fire. This unforgivable act of vandalism happened in 2001 in defiance of international opinion.

Focal places in the Arctic world

If we turn to another part of the world, namely Greenland, to look for focal places, we find them within a timescale of a good 4,500 years, which covers various Palaeo-Eskimo and Neo-Eskimo cultures as well as the Norse period of the Middle Ages. We are faced with various attitudes to life which can be identified with reasonable certainty as shamanism, animism and Christianity, each of which has had its focal places. But not all are equally easy to identify for posterity, or to identify at all. We know Christianity because it is easily located through churches, while we can only approach the forgotten places by roundabout paths in attempts to understand a life-world that has long since vanished.

All the same, we are talking about beings of our own species, Homo sapiens, and one of the distinctive features of this species is that it asks the question *why* and looks for explanations, reasons and connections. One is not content simply to be, one wants to know about it and to know the signposts and codes that lead one through both life and the landscape. That is why it is reasonable to assume that the concept of focal places, and their identification, orientation and memory, were also overarching principles for Palaeo-Eskimo man and woman.

We do not know much about the spiritual life of these people, but through parallels from other older and contemporary cultures we can assume that their conceptual world took a kind of physical form by being projected into one or more points in the natural surroundings which stood out in some way. They established a focal place, from which myths could be rooted and grow, and where divinities could have visible dwellings.

The Dorset Culture gives us stronger hints: in this case we have



Fig. 3 Kristian Kristiansen and Stine Wiel taking a break while visiting the ruins of Persepolis in 1970. Photo: Joel Berglund.



Fig. 4 Joel Berglund, Kristian Kristiansen and Stine Wiel posing for a street photographer in Teheran in 1970 before applying for a visa to go to Afghanistan.

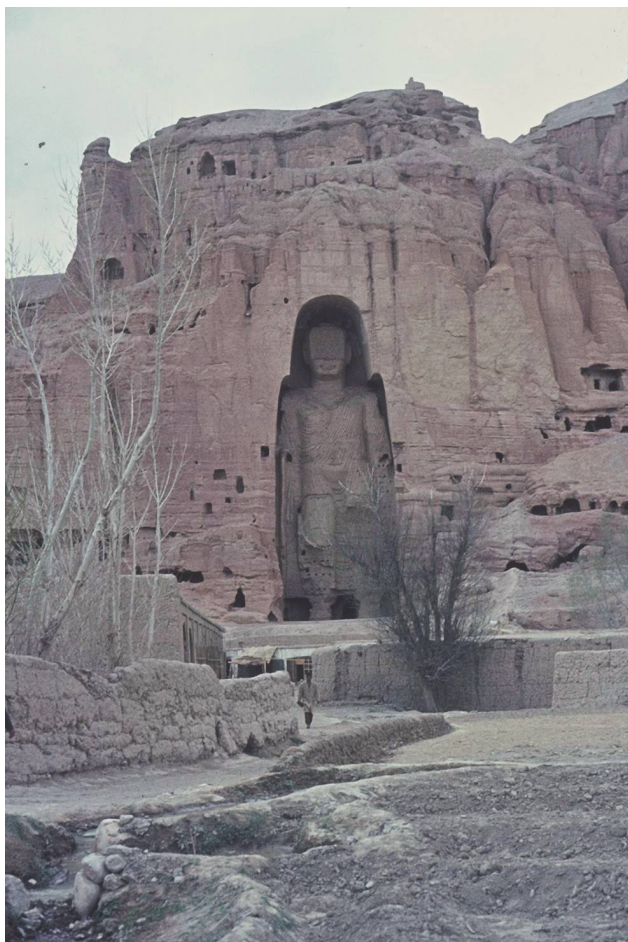
small sculptures that more than hint at a shamanistic relationship with the animal world. More interesting in this context are the ruins of long buildings with long rows of fireplaces, Arctic megalithic structures which have been found within the last few years in north-westernmost Greenland and Arctic Canada. These buildings do not appear to have been constructed as dwellings, but have been interpreted as having ideological/social content and as sites of trade and exchange (Appelt et al. 1998:24).

The question then is whether or not we are actually looking at focal places, and I believe we can say that we are, since, if the interpretations hold water, we simply have a division into levels of cult, trade and social relations that converge in these places.

It is only with the people of the Thule Culture that we gain good insights into the spiritual world in which they moved, but whether or how much it was related to the cosmologies of earlier Eskimo cultures is unknown (Egede 1939 (1741):392ff). The Thule Culture does not seem to offer us any particular formations in the Greenlandic landscape that had a universal spiritual meaning. In recent tradition, though, there are a few references to offerings at large rocks which in some way stand out from their surroundings. In that case we are talking about a focal place at the local level, indeed perhaps right down at the family level (Egede 1925 (1734/1740):155). Another factor is that people saw their surroundings as populated by inua, which could live anywhere, and which in a way made the whole landscape into a focal place.

Among the house ruins of the Thule Culture there is a special type of building defined by the Greenlandic word *qassi*, which is explained in the dictionary as an 'Eskimo festal house' (Gulløv 1988:192). This type of construction is round, without a house-passage, and has no functional components like a cooking niche, storage spaces and bed platforms. So in this case, like the longhouse of the Dorset Culture, we have a building that was erected with a purpose that was different from that of a dwelling, i.e. to house social and religious gatherings. So, it appears that these *qassi* must also be designated as focal places (Gulløv 2004:330-331).

Scattered around the Greenlandic landscape one can still see burials that belong to the Thule Culture, while the graves from the earlier Eskimo cultures are not yet known. They may be single burials or whole formations, they may have been built up as beehive tombs with false vaulting, standing free in the landscape, they may appear as heaps of stones built up against rocks, they may be low and almost vanish into a scree or an old beach ridge, or they may lie as heaps of stones under rock projections, etc. Common to most of them is the fact that they are placed so that, from the grave, there is a beautiful view, whether they are positioned high or low in the terrain; and it seems reasonable therefore to assume that this view is part of the grave. Can the view be regarded as the 'focal place' of the deceased, and the grave as the focal place for the viewer? The custom was that one was buried where one died, so there are many graves that are not associated with settlements, along routes and up in the hunting areas of the hinterland. The graves must be regarded as focal places at the family or kin level, which helped to bring order to the landscape. They could emphasize a sense of belonging, speak of a history and pin down narratives of kin or tribe. Nevertheless, one can perhaps also say cautiously that with the graves and an apparently widely shared funeral custom, what one has here in principle is a focal place that extended beyond the purely local. The graves were mostly carefully built, often with the skilled craftsman's knowledge of the material and its possibilities, so



that this in itself tells us that the graves, as special constructions, were intended to stand forever and therefore involved an idea beyond the mere disposal of the deceased.

Focal places in medieval Norse Greenland

The traces left by the earliest Eskimo cultures give the impression of a “light tread on the earth”; the later ones are more clearly discernible in the landscape, but at the same time emphasize a highly mobile way of life. The Norse settlers of the Middle Ages occupied the landscape in a quite different way, which sends out signals of ownership, and this is possibly also reflected in the place-names, which often have a genitive ending associated with a personal name. The Norse cultural landscape expresses a quite different permanence in the relationship between landscape and man, which is naturally also expressed by focal places. Above all it is the churches, large and small, that are the focal places of the Norse culture. If the farms marked the fact that someone had taken possession of the landscape, the churches underscored this by signalling control over the spiritual dimension of the landscape. The churches would have asserted themselves in the landscape by being a special type of building, in some cases with their height as a purely physical manifestation of this; but to this we can also add an extra dimension: sound. We know from archaeological

Fig. 5 The great Buddha figure of Bamiyan (53 m high) is no more. It was destroyed by artillery fire in 2001. This unforgivable act of vandalism happened during the years of the Taliban regime in Afghanistan. Photo: Joel Berglund.



Fig. 6 The overgrown ruin of a circular qassi seen as a bowl-shaped depression in the ground situated together with winter houses in the archipelago south of Maniitsoq in South Greenland. Thule culture c. 1700. Photo: Joel Berglund.



Fig. 7 The ruins of the best preserved medieval church in the North Atlantic area as seen from the adjacent festival hall. Hvalsey erected about 1300 in South Greenland. Photo: Joel Berglund.

investigations that at least some of the larger churches had outside bells and that these were rung in accordance with the regulations of the church. The churches could thus communicate their message by appealing both to sight and hearing beyond their own physical setting.

The general nature of the power relations of the church in Norse Greenland is a different question, but irrespective of this the churches should probably be regarded as the strongest focal places, if only because this was where the relationship between life on earth and life after death was explained and managed. The function of the church building apart from the spiritual aspect was to stand there, to be a visual point, to gather people in and present the myth that was reinforced by ritual repetition with a view to eternity.

Unlike the situation in the Eskimo cultures, it was important that the dead Norse settlers were buried in consecrated ground, that is at a burial site by a church with this function. Thus, in addition to the church, the burial site itself becomes its own focal place, separated by an enclosure from the secular world, with its own spatial organization, for example, and ordered in terms of gender and status in accordance with the former worldly position of the



Fig. 8 The bronze statue of Leif the Lucky erected in the year 2000 in Qassiarsuk in memory of the first journey to North America by people from Europe. The statue was a gift from Icelanders now living in the USA. (Photo: Joel Berglund 2001)



Fig. 9 The stone in the centre of Nuuk where the missionary Hans Egede allegedly performed his genuflections. (Photo: Joel Berglund 2001)

Creation of focal places for commerce and remembrance

The establishment of focal places never ceases; as mentioned earlier, they are constantly being created, and just as birth and death are constants in human existence, the construction of focal places also appears to be part of human continuity. Professionally we ourselves can create focal places through our interpretation of archaeological situations, places that we designate as having had some special importance because we think we can get many good answers to our questions there, or because we believe that the location of a place had a particular weight. Nor is it unknown for us to be inclined to read a cultic meaning into a situation if no other possibilities seem to be meaningful. And that is acceptable, too, because the archaeological hermeneutic situation is not static, but changes all the time with the potential inherent in new ideas, thinking and methods.

A quite different genre is the establishment of focal places with retroactive effect. This may be done in collaboration with experts, or that may be a bothersome stage that is simply skipped. One sees it for example in the erection of reconstructions of buildings from a remote past, and I suppose it is usually done against the background of the archaeological knowledge available. Yet it is not rare for a conflict to arise between the scientific scruples and suggestions of the experts on the one hand and the builder's zeal to get things finished on the other. The result is often as might be expected.

In Greenland we have examples of this at Qasiarsuk – or Brattahlid, as Eric the Red called the place. However, the tourist industry is greatly satisfied with the reconstruction here, at the Eastern Settlement of the Norse settlers, which now goes under the name of 'Eric the Red's Farm'. Repeated objections to this have not changed anything, nor has the fact that the ground plan for the building is that of the oldest phase of the building complex at the 'Farm beneath the Sand', which as we know lies in the Western Settlement. One cannot be bothered with such particulars. And now there is a reconstruction of a church and a longhouse, built in the year 2000, which will inevitably overshadow the original sites beside them, in my view removing an important dimension – the sense of discovery – from the visit.

Today Brattahlid is a focal place, given the fact that it was the farthest outpost to the west in the spiritual empire of the Roman Church, and that the first church of what we today call 'the Western Hemisphere' was built there. Moreover, it was from there that the first Europeans sailed and made contact with the New World and its inhabitants.

All this is charged with the meaning that contributes to establishing a focal place, and this is emphasized not least by several monuments that firmly root the Norse in the small Greenlandic sheep-farming settlement. The central part of the ruins is explained in a fine bronze relief by the Danish artist Sven Havsteen-Mikkelsen and a short distance from this one sees the two abovementioned reconstructions, and towards the southwest at the highest point of the settlement, a standing full-length bronze

figure of Leif the Lucky stands in martial garb, as if he has just stepped out of a Wagner opera. On the base of the figure one reads a text about the deeds of the Norsemen in three languages. A stairway leads up to the figure, and at its beginning stands a runestone, also placed there in the year 2000. On the way towards the harbour one sees a rather smaller stone with a bronze relief of a Viking ship by the Greenlandic artist Hans Lynge. The overture to this Neo-Norse epic in stone and bronze stands at the exit from the terminal in the airport on the other side of the fjord, a standing stone with a relief consisting of runes and interlaced ornamentation over which hovers a Vendel period helmet complete with nosepiece.

It is almost too much.

A last focal place with the benefit of dubious hindsight can be seen in Nuuk across from the culture house Katuaq. It is a stone fenced-in by a heavy chain, called 'Hans Egede's Kneeling Stone'. Tradition has it that the missionary often fell to his knees at this point, and a special interest group in the town had the stone marked like this a few years ago. And here we come to an important point in these thoughts on focal places. It is not known with certainty that this is the place where Hans Egede performed his obeisance, but it was decided that it must have been here. The content of the tale of Hans Egede's genuflections required a physical anchorage – and got it.

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RITUALS, HOARDS AND WETLANDS

ZOOMORPHIC SCEPTRES AND THE UNICORN

Leo S. Klejn

Abstract: This article discusses the origin, meaning and use of objects that have previously been regarded as zoomorphic sceptres. This artefact type has been found in the steppes of North Caucasus and in Romania and dates to the Eneolithic period. Here it will be argued that the objects are symbolic representations of unicorns which were used as implements of defloration.

Keywords: North Caucasus, Romania, Eneolithic, horn, horse, unicorn

Finds: More than eighty years ago, in 1928, a stray find was delivered from the steppes of the North Caucasus to the ethnographic department of the Russian Museum at Leningrad (which later became its own distinct museum, the Museum of Russian Ethnography). It was a stone sculpture of a head of an animal found near Terekli-Mekteb (Fig. 1). The find was saved intact, i.e. this was not a broken off head, but had been made as such: a head only. The sculpture was small, less than 14 cm long. The fore part of the head (the snout) was polished, while the back part (the skull) was left shaggy. The polished area ends just after the ears, and a large ledge sticks up from the hairy part, also polished – a horn.

Also in the 1920s, some similar artefacts (at first two) were found in Romania, both in the agricultural settlements of Eneolithic, where they were discovered along with painted ware (Fig. 2). This sparked a debate among South-East European archaeologists regarding the type of animal represented. Some considered this to be an imaginary animal (Andrieşescu 1929: 6 – 7), or a snake

(Nestor 1933), others a dog (even its breed was suggested: a watch dog, bulldog or mastiff; Berciu 1962; Ghetov 1980). There was also the idea that it might be a rhino or hippopotamus (Popescu 1941).

The scholars were, however, in accord that these sculptures were destined for affixing (with the hairy part, very flat) in a turned shaft. They would have been inserted into an opening or fissure where they were probably held in place with resin and straps, while the hind ledge helped to prevent the binding from slipping off. In short, these are heads of rods – batons, standards, staffs – signs of royal or sacral power. The artefacts received the name: zoomorphic sceptres.

Comparing the Caucasian find with Romanian ones, Aleksandr lessen (1952) came to the conclusion that a head of a pig or a wild boar is depicted. He left open the question regarding the origin of these sceptres.

Origins: Having found no prototypes in the Danube basin, the students of this area identified the Caucasian find as of Eastern derivation (Berciu 1954: 546; Dumitrescu 1955: 929, 933). The idea of an eastern Volga-Caucasian origin of the sceptres gained

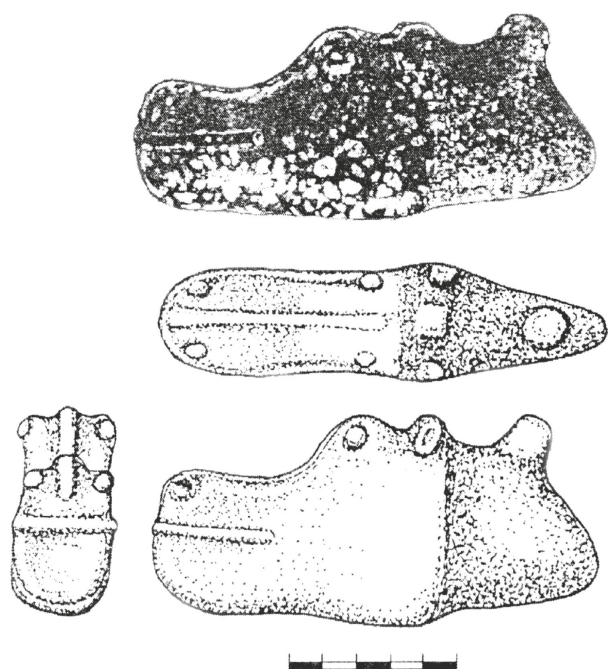


Fig. 1 Stone sculpture from Terekli-Mekteb (photograph from Iessen 1952).

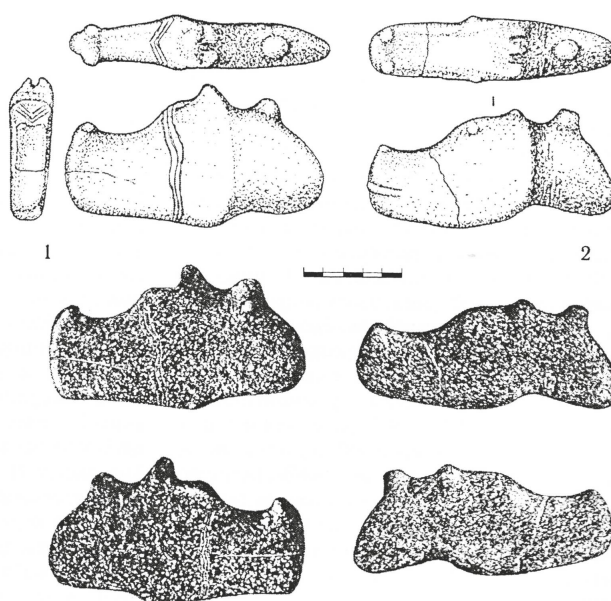


Fig. 2 Zoomorphic sceptres from Romania: 1 – Sălcuța, 2 – Fedeleşeny (photographs from Andrieşescu 1929).

a foothold in foreign archaeology and has been repeated ever since, echoing through the generations. Apparently, only one scholar (D. Berciu 1962) opposed this idea: he was perplexed by the distant find-spot and assumed an Anatolian influence both in the Caucasus and Balkans. Yet in Asia Minor there are no such finds at all.

If one postulates the movement of the sceptres from the steppes, one can make an even bolder assumption: the migration of steppe people (for the nomads even 2000 km is not an obstacle). The sceptre found in Casimcea (Romania) supported archaeologists in this conviction: this artefact appeared in a grave where the skeleton was painted with red ochre, and this is a peculiarly steppe feature (Popescu 1941).

Hence a new idea was put forth by scholars: these objects are depictions of horse heads! (Berciu 1954: 541 – 545, but in 1962 he retracted this idea; Dumitrescu 1955: 928; Dodd-Oprițescu & Mitria 1983)

Surveys: Meanwhile, following World War II, the new number of Balkan sceptres became known to archaeologists, now not only from Romania, but also from Yugoslavia and Bulgaria. Over 17 years three special articles on these artefacts appeared in the USSR with full catalogues: the first refers to 13 finds, the last to 23, a dozen from the territory of the USSR.

The first of these articles was written by Danilenko and Shmaglii (1972). Shmaglii excavated a barrow with cromlechs near Suvorovo (Lower Danube). A man and a woman covered with ochre (like in Casimcea) were in the oldest grave, where there was also a sceptre. For the authors this find solved the long debate: they felt this was conclusive evidence that the animal represented is a horse, and as all sceptres are of the same kind, all of them depict horse, albeit with varying degrees of clarity.

The authors entitled their article ‘On one turning-point in the history of Eneolithic population of Southern Europe’. The essence of the shift was seen in the Eneolithic economy that was formed in the steppes and specialized in cattle-breeding; horse-breeding and ridership then emerged, and patriarchal power was established, as evidenced by the horse-head-sceptres. In the middle of the fourth millennium BC the westward movement of steppe tribes began. Riders seeking agricultural land arrived on their battle horses in the nearest steppe areas, and influences of the steppe penetrated farther west. To Danilenko this marked the spread of Indo-Europeans – something like for Gimbutas.

In their article Danilenko and Shmaglii isolated another series of sceptres, one which was sketchier and more schematized. This series was also the focus in a second survey, by Tsutskin. His survey was made in connection with the discovery of a find from Sinitsyn’s excavation in Kalmykia and its arrival at the Elista Museum. This sceptre from Arkhara was made in a completely free manner – a simple oval with a fillet along the rounded edge, a cross fillet and a protuberance on the top. There was no hint of the head of an animal (Fig. 3).

The third survey was made by Dergachev and Sorokin (1986). Having read the article by two Romanians (Dodd-Oprițescu and Mitria 1983) who observed that naturalistic sceptres were centred mainly in the Karpato-Danubian basin (including Moldavia), only one find is in the Caucasus – the same Terekli-Mekteb, and schematic sceptres were found in both locations. And both areas,

Dergachev and Sorokin added, are divided by the territory in which no sceptres are present – nearly the entire Ukraine.

Dergachev with his co-author made an even more detailed observation: the western area is also divided into two parts. The schematic sceptres are gathered in the borders of Tripolye culture (in the basins of the rivers Bug, Dnestr, Prut and Seret), while naturalistic ones are aggregate more to the south-west, in the Lower Danube basin. Taking the assumption that artefacts develop from the simple to the complex, Dergachev and his co-author concluded that naturalistic sceptres derived from the schematized type, and used this to support their hypothesis of an east to west migration (Fig. 4).

Sceptres?: But, why have these objects been identified as sceptres? A sceptre is destined to be observed from all sides while these are rather flat. The theme – a head of an animal – demands volumetric presentation, so the flattening (not peculiar to a head) demands another explanation, most likely to do with the destination of the artefact. The head of a sceptre has to sit fast and permanently on the shaft, but here there is no device or provision for that. The best solution would have been to add a shaft-hole, and shaft-holes are present in this period in axes – so, why are they absent here? Is the stone too hard? Surely not, for the details of the contours are carved into this stone – if it had been the intention, the shaft-hole could also have been added.

Thus it seems that the ‘sceptre heads’ in general were not intended for a shaft or pole. They have neither the shaft-holes nor special grooves for binding that one might expect. Their back portion was left without polishing not because it was hidden under binding or in the fissure of the pole, but because it had to be in a man’s hand and not used in actions that demanded polishing. Indeed, the polishing could have had not just an aesthetic role, but also a technical purpose – if some actions intended for the artefact were demanded smooth sliding, inserting, shoving in and so forth.

In the Hermitage Museum collection of abstracts I have published and defended (Klejn 1990) my opinion that these artefacts should in no way be regarded as sceptres.

Horse?: In the same publication I also challenged people to question why the search to identify the animal had generally been limited to the circle of animals in our natural world. This might be explained simply by the lack of comprehension of a culture that is alien to us, onto which we transfer notions that are real and concrete to us, or in our ‘comfort zone’. Any medieval bestiary and the ancient (Classical) Physiologus are filled to a considerable extent with descriptions of creatures that are entirely fabulous – chimeras and monsters, all sorts of kerubes and seraphs, tarandrs, centaurs, pegasuses, dragons, and three-head serpents. Among them, not least, is the *unicorn* (Lat.), the Greek *monokeros*, Germ. *Einhorn*, ancient Russian *inrog*.

This animal is prominent in the folklore of Indo-European peoples (Shepard 1930; Schöpf 1988) where it is depicted as a horse with a large horn on the forehead (Fig. 5). Thus, the artefacts in question may well really represent a horse, in a way, albeit a horned horse.

It is often said that the unicorn is mentioned in the Old Testament in the Bible, and Hebrews are not Indo-Europeans, but in fact there is no unicorn in the Bible. The Greek translators of the Bible used the word *monokeros* to represent the Hebrew word *re'em*, which simply meant ‘fierce beast’, without specifying the particular breed (Ivanov 1980).

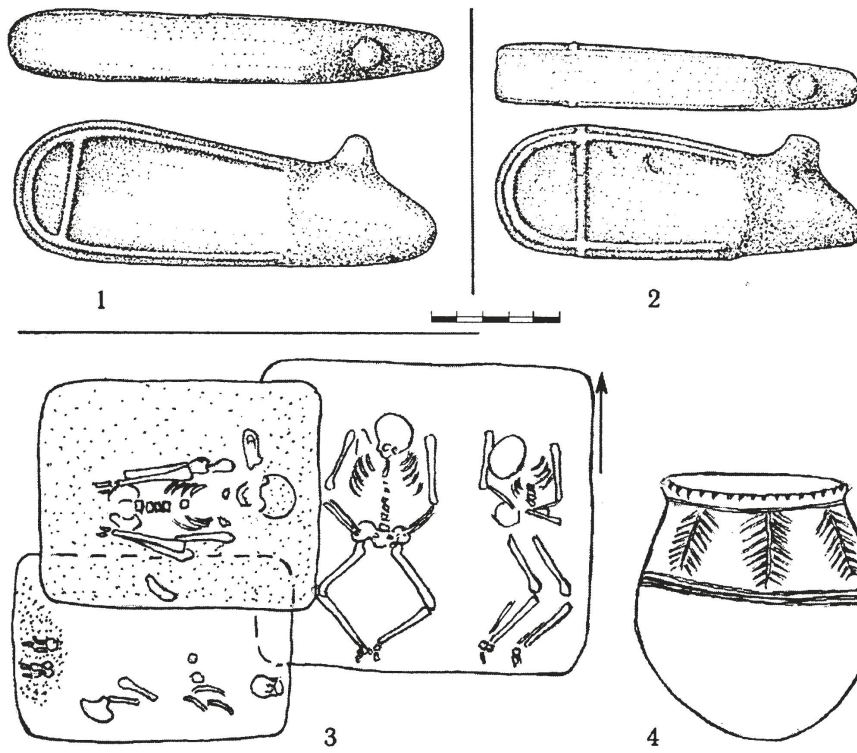


Fig. 3 Sceptres from the Volga basin: 1 – Kuybyshev museum, 2 to 4 – Arkhara.

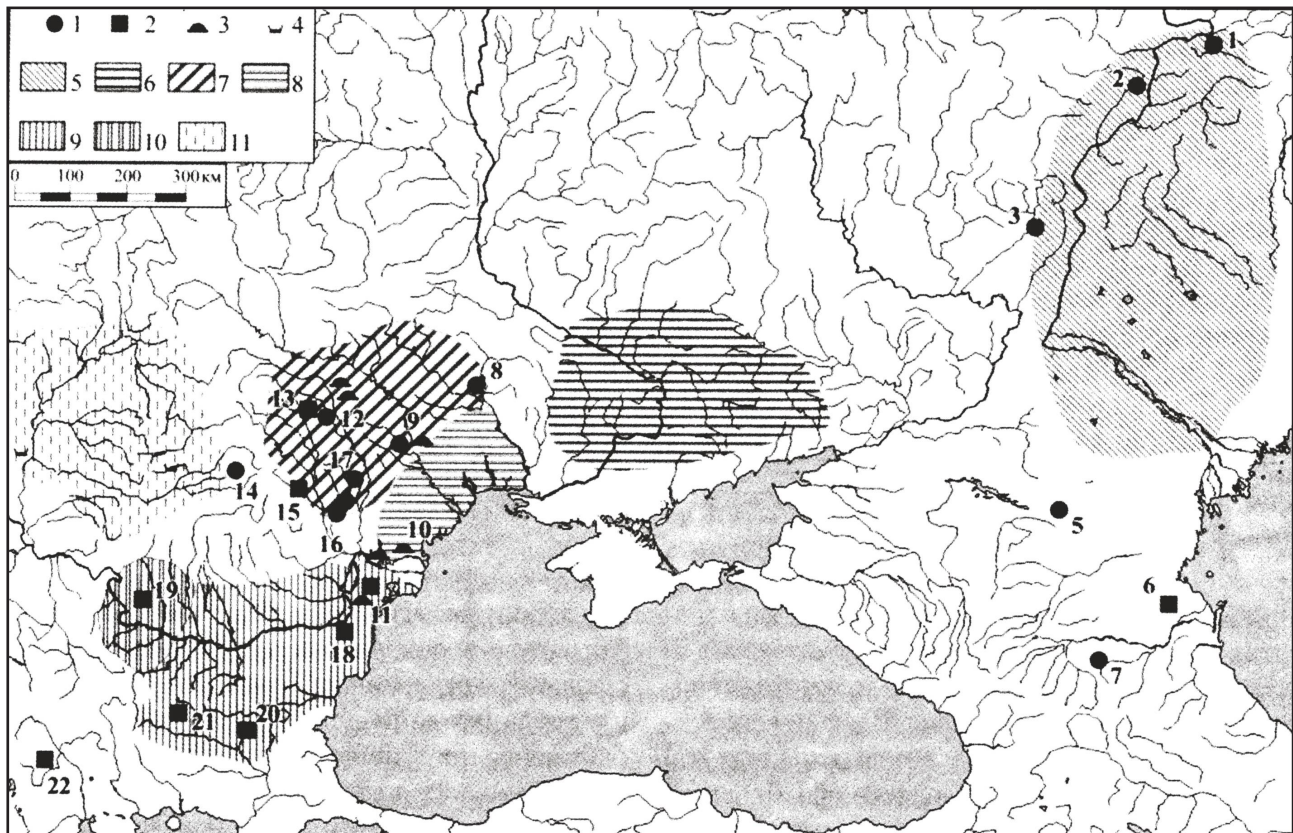


Fig. 4 Map of the distribution of sceptres (after Dergachev and Sorokin 1986). Notation conventions: 1 – schematic sceptres, 2 – realistic sceptres, 3 and 4 in general not sceptre finds (but sites of Suvorovo and Decia Mureşului groups). Then follow designations of culture areas: 5 - Khvalynsk, 6 – Sredniy Stog, 7 – Tripolye B1, 8 – Suvorovo, 9 – Karanovo VI – Gumelnița, 10 - Sălcița, 11 – Tisapolgar.

The figures on map are references to the sites with sceptres, including 5 Arkhara, 6 Terekli-Mekteb, 10 Suvorovo, 11 Casimcea, 13 Fedeleşeny, 19 Sălcița, 22 – Suvodol.



Fig. 5 A maiden provides refuge from pursuit to a unicorn. A miniature from a Bestiary of twelfth-century England. National Library in Petersburg, lat. Q, v. V, 1 (publ. Rabinovich 1991).

According to myths, the unicorn reproduced in a strange manner, its reproductive organ being the horn. In the Far East this animal was well known to the Chinese people, and the Han chronicles (two thousand years old) tell of it. Here the unicorn is the yellow beast *Ch'i-lin* (in Russian manuscripts inrog's 'body is from copper'). It possessed a deer's body, horse's hoofs, a bull's tail and the snout of a wolf. It would feed on grass, and its horn was equal to a genital organ. A related Chinese animal was the Flying Yellow Horse, born from the Earth and living a thousand years. It possessed wings, and the horn was on the back (that is behind the ears). The word *Ch'i-lin* is not Chinese, but in fact borrowed from Indo-Europeans; it is close to the Tocharian word meaning 'heavenly' (Pulleyblank 1966:31 – 35).

A legend spread across Europe that the unicorn reproduced without copulation, lived without females and valued purity above all – it could only be tamed by a virgin. Not a little girl (like Alice in the Wonderland) but a maiden (Kuntze 1908; Shepard 1930; Schöpf 1988: 65 - 90) (this is why in Christian symbolism the unicorn is connected with the Virgin Mary). Coupled with the notion on the genital destination and association with the horn this suggests that the unicorn is one of those frightening beasts that in the prehistoric mind was connected with the custom of initiation ('Gods of initiation'), the transition from childhood to marriageable age.

In many traditions the main acts of such initiations were rites of 'opening' the genital organs for the sexual life: circumcision for men (retained till historical times among Egyptians, Hebrews and Muslims) and defloration for women (retained in Africa) (Lightfoot-Klein 1989). It was held that first copulation without this was deadly dangerous for the husband and that only priests were able to perform this operation with the help of supernatural forces (Hertz 1887: 88 - 166; Ross 1994) – in our case by means of engaging the furious monster with its magical horn. Why, for Indo-Europeans, this monster took the appearance of a slightly changed horse is a special question connected with the role of the horse in the cults of fertility and the other world, where souls of the dead wander till the new birth. To some extent it is probably connected with the belief in the Ancestor Horse.

Defloration: The stone 'sceptres' are just such ancient symbols, embodied in stone. They represent the frightening monster of initiation; in other words, they were devices for defloration. In the deep past, the taming of the unicorn by a virgin included the virgin receiving it into herself. She satisfied it with her purity and fed it with her innocent blood, while it offered her the ability to be a wife and continue the human genus – to realize immortality.

Support for this hypothesis may be seen in the placement of artefacts in the Suvorovo find. In the grave containing a man and

a woman the so-called sceptre was discovered in association with a man's skeleton. The artefact was not in the typical location for axes and maces, i.e. not on the chest or shoulder, but on the pelvis, in the genital region (not fixed on the drawing – Fig 6).

These ritual instruments could apply in agricultural settlements, too.

In defence of traditional treatment: In 2007 Dergachev summarized all of his studies of 'sceptres' in a large book (in octavo) and entitled it *On sceptres, horses and war: studies in defence of M. Gimbutas' migration idea*. In the book there is a reconstruction of the position of the sceptre on the shaft – or, how it should be placed in Dergachev's opinion (Figs. 7 and 8). In his book Dergachev disagrees with my ideas and supports the traditional construction. An overview of his argument is as follows:

1. These zoomorphic sceptres (now totalling 36) are divided in two main groups, realistic and schematic, and each of these groups may be subdivided into three sub-groups: extremely simplified forms, intermediate and extremely complicated. The extremely simplified forms of both main groups practically coincide. The typology is objective since both Ukrainian and Western scholars produced comparable and equal typologies.
2. One can present these groups as the development of one initial type.
3. The initial type is the extremely simplified kind. From it the realistic image develops and evolves into an extremely detailed and complicated depiction (Fig. 9).
4. The stratigraphy and chronological interrelationship of assemblages demonstrates that Khvalynsk sceptres are earlier than 'Novodanilovka'.
5. The realistic image is undoubtedly a horse as proved through the comparison of proportions with real heads of horses, and the distortion is the result of expressive isolation of essential details of a head, eyes and nostrils. The 'horn' is hinted at by the cut mane or appears as only a trace. Indeed on the sceptre from Cairacilia instead of a single horn there are four sharp bumps – like in a 'sceptre-dagger' from Oleneostrovsky (Deer Island) cemetery (Fig. 10).
6. The horse is bridled. This is suggested by a depiction of *Kappzaum*, where a vertical line divides the front of the snout (Fig. 2,1; 3,1 – 2; 11, c – f).
7. In every sceptre the polished half (the snout) is a recognized, meaningful part while the shaggy hind part was intended as the place where the shaft would have been attached.
8. The shaft can be imagined as a pole with a curved end with a socket into which the hind part of the sceptre was inserted. The model for the whole might be the Palaeolithic 'chief batons' (made of one piece) with the horse head and Neolithic daggers with the shaft formed as an animal head.
9. The intended function of these artefacts is to serve as signs of power, i.e. sceptres. The role of sceptres in ancient Greek society and in other cultures is considered.
10. From sceptres with horse imagery the social structure of Eneolithic societies where they were used is derived, and the presence of the horse there is confirmed.
11. Considering the two areas of distribution (eastern – Middle-Volga basin and western – Karpato-Danube area), schematic sceptres prevail in the eastern region (Fig. 12), and they are accepted as earlier, initial, so the eastern, Middle-Volga area has to be considered the origin for the formation of the whole type (conjointly with the domestication of the horse).
12. Domestication of the horse in the Eneolithic is of course

proved separately, but (in view of the difficulties of distinguishing bones of domestic vs. wild) with indirect data, in particular through consideration of the herd composition in domestic animals. It must be balanced – e.g. if the cattle portion decreases, then the horse part must grow to compensate for it. If another kind of animal decreases, the horses recognized by bones must be identified as domestic.

Such is Dergachev's line of reasoning. Let us consider it critically.

Counter-arguments:

1. I have no objections to the first point, though its argumentation with reference to an equal solution achieved by various authors does not increase the impression of objectivity of the solution. Instead it seems quite possible that it resulted from the borrowing of ideas rather than a coincidence of solutions.

2. Similarly, I will not contest the second point, though in principle other treatments of typological distinction are also possible, not necessarily by derivation. One should especially prove that there was here a development and not variation.

3. I definitely disagree with the third point. Dergachev issues from the evolutionist perspective: the development from simple to complex (p. 114). Yet Evolutionists William Holmes (1886) and Otis Mason (1895) and especially anti-evolutionists like Alfred Haddon (1895) and Hjalmar Stolpe (1927) showed that the reverse run of changes was quite possible. It prevails in semiotics and artistic creation when applied to particular specimens (not whole genres).

Meanwhile here we have not just simple artefacts, but images. Imitations of nature, although rough, are always more ancient than the looser schemes, depicting the same objects.

How does Dergachev imagine the scenario of the process of changing types of 'sceptres'? At first 'extremely simplified' (let us say directly: indeterminate) forms appeared, then gradually they began receiving real outlines of the animal and simultaneously obtain symbolic meanings and transform in its schematized variety? But in the beginning, what made the owners of these 'sceptres' and surrounding people recognize particular images of animals in these abstract forms? And if they were loose forms and symbols initially, what was the purpose of giving them a more realistic form later? The process usually goes the reverse way: using the actual forms as a visual symbol is primary, and only later, after adaptation and forming the skills of refined recognition, conditionality grows.

It is quite another matter to perceive the development of skills. The initial forms are rough, without much detail, while later forms are more perfect, with better, more realistically executed outlines and details. Yet rough, unskilful forms should be distinguished from abstract forms that avoid details. There the artist achieves greater conditionality. In addition, it is very difficult to imagine how schematization, geometrization, transforming realities into decoration (into flutes and U- and O-shaped lines) might be a trend parallel with efforts to expand realism. How could these two conflicting trends developed simultaneously in the same milieu?

In my view it is without doubt that the progression and development here ran from realistic forms to more schematic ones. The generalized forms emerged as the simplification of more complex prototypes, and required less of an investment in terms

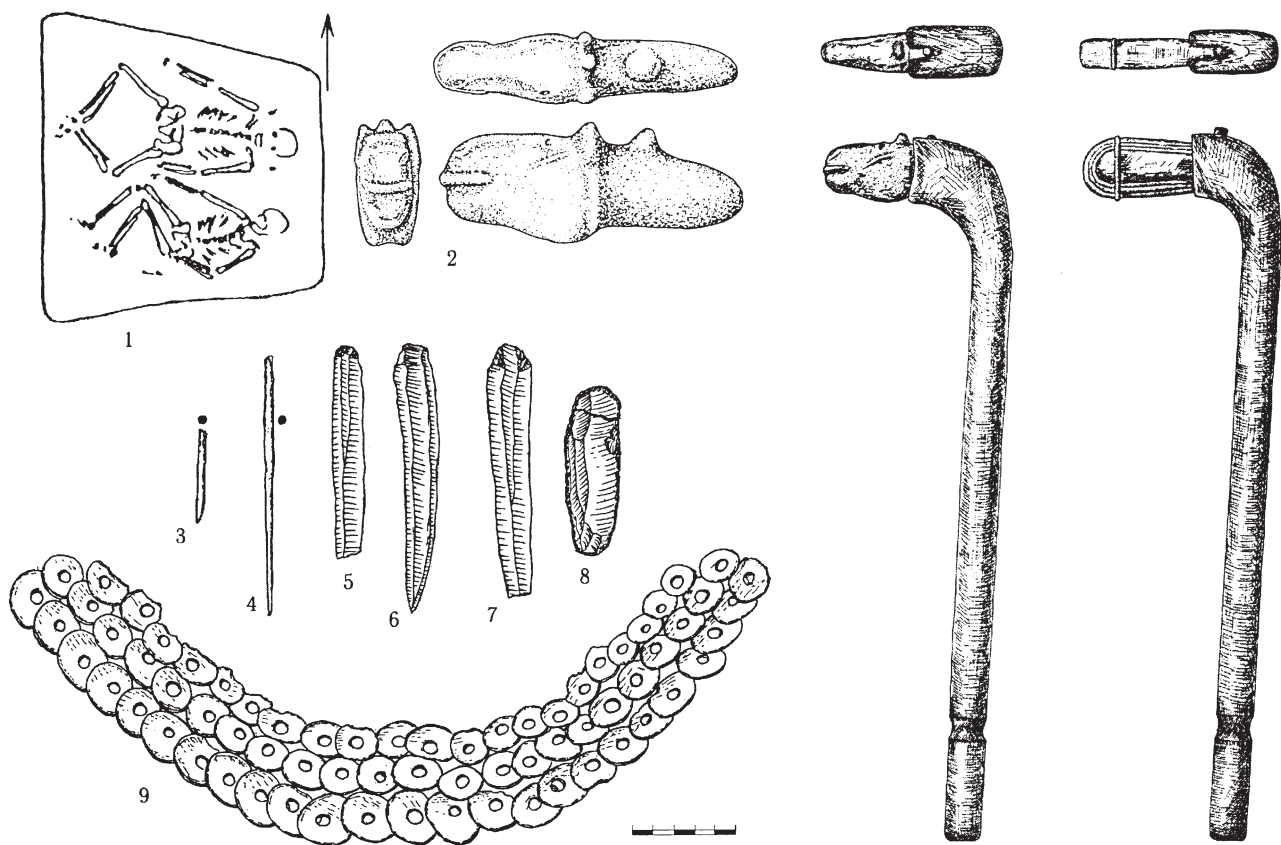


Fig. 6 Double burial from Suvorovo II, barrow 1, interment 7, and its finds (after I. L. Alekseeva). The sceptre is not fixed on the drawing, but the description indicates that it was on the pelvis of the man.

Fig. 7 Reconstruction of the so-called sceptres (by V. A. Dergachev 2007).

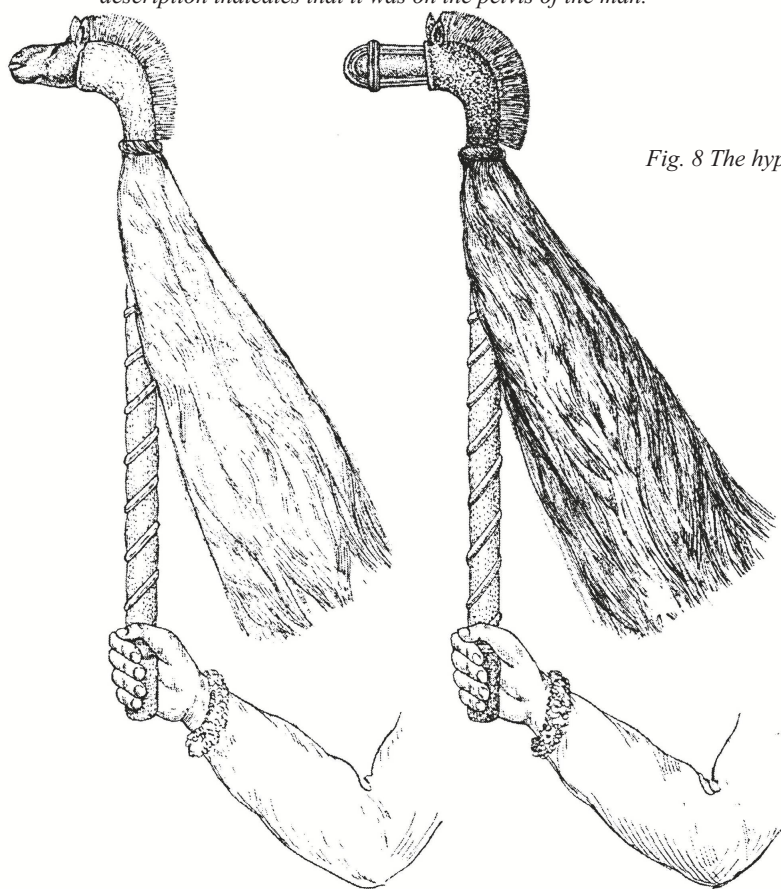


Fig. 8 The hypothetical appearance of the sceptres in use (by Dergachev 2007).

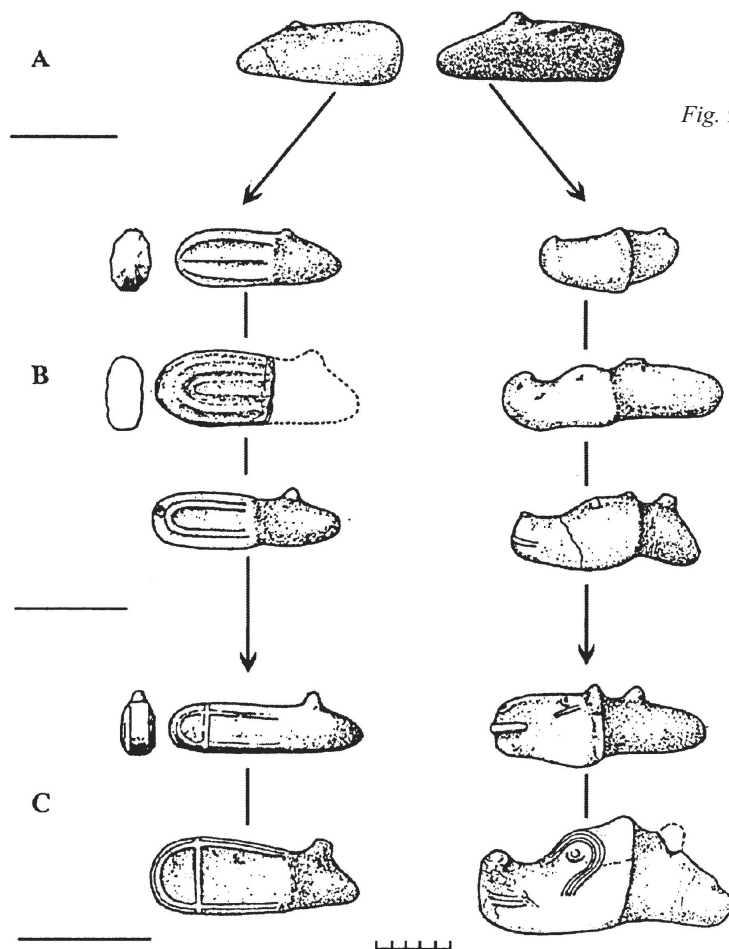


Fig. 9 The supposed development of sceptres (scheme by Dergachev 2007).

of labour (e.g. the future owner of the implement is likely to have been a less prestigious person).

Schematized 'sceptres' should therefore be regarded as resulting from the degradation of the animal images presented in the 'sceptres' that were nearer to nature. That means that the schematized 'sceptres' (more conditional) were later than the realistic ones. The near total absence of naturalistic 'sceptres' in the East implies that 'sceptres' did not emerge there. As soon as they are alien to the culture of agricultural settlements of the Balkans, only the adjoining strip of the steppes remains – the area that stretches from the south of Moldavia and west of Romania and Bulgaria. Dergachev has indicated the presence of inhabitants in this area – this is the culture which had burials of the type Suvorovo and Kaynary dated to the middle of the fourth millennium BC.

Here the inner contradiction of Danilenko's construction becomes clear. 'Sceptres' in the shape of a head of a 'bridled' horse, which might imply the power of horse-breeding patriarchs, were connected with the southern zone, but the horse is rare there, while the prevalence of horse-breeding, horse herds, riders and grazing is presumably observed in the north zone! The deep roots of the Pit-grave (Yamnaya) culture, quite the reverse, are traced in the north zone (egg-shaped ceramics, decorated in the upper part, etc.). Yet the barrows were earlier in the southern zone together with megalithic constructions, while in the northern zone cemeteries were initially flat, without barrows. It does not come in a unified ancestor culture that could be called Yamnaya, or at least

pre-Yamnaya. The 'sceptres', cord decoration and barrows do not appear exactly where the local roots or eastern connections are.

4. The facts which Dergachev chose to support his chronological progression do not convince me. This is not a system, but isolated fragments (one from Khvalynsk culture, the other from Novodanilovka) which do not stand up to rigorous testing: the chronological relationships of the cultures are not settled, the position of finds within the culture is not reliable, the stratigraphic data may appear the result of mistakes in the field during excavation (until they are confirmed by other facts). In order to advance a theory based on stratigraphy Montelius considered it necessary to at least have a few separate cases of fixed relationships; he did not dare to draw conclusions on the basis of just one case. And here is a single case, and in addition one that is so unclear.

5. Dergachev put a lot of effort into proving that a horse is depicted and not a serpent, hippopotamus or a pig. His arguments do not challenge my suggestion that it is instead a unicorn, which had the look of a horse, if only with a horn. All 'sceptres', even the most schematic, have a horn. There is only one case where there are four projections instead of a single horn (the 'sceptre' from Cairaclia), while in the majority of cases it is just a single horn, so it can hardly be explained as the reduction of a cut mane to a single protuberance, but rather the transformation of a horn in one case into several probably from carelessness or a lack of understanding of the original image. In addition even if one could assume some genetic line from early Neolithic Oleneostrovsky cemetery of North Russia and a stray typologically Eneolithic find

Fig. 10 The supposed origin of horn of the sceptres (after Degachev 2007):
a) sceptre from Deer Island Neolithic cemetery (after N. N. Gurina) and b)
sceptre from Cairaclia (after N. D. Russev).

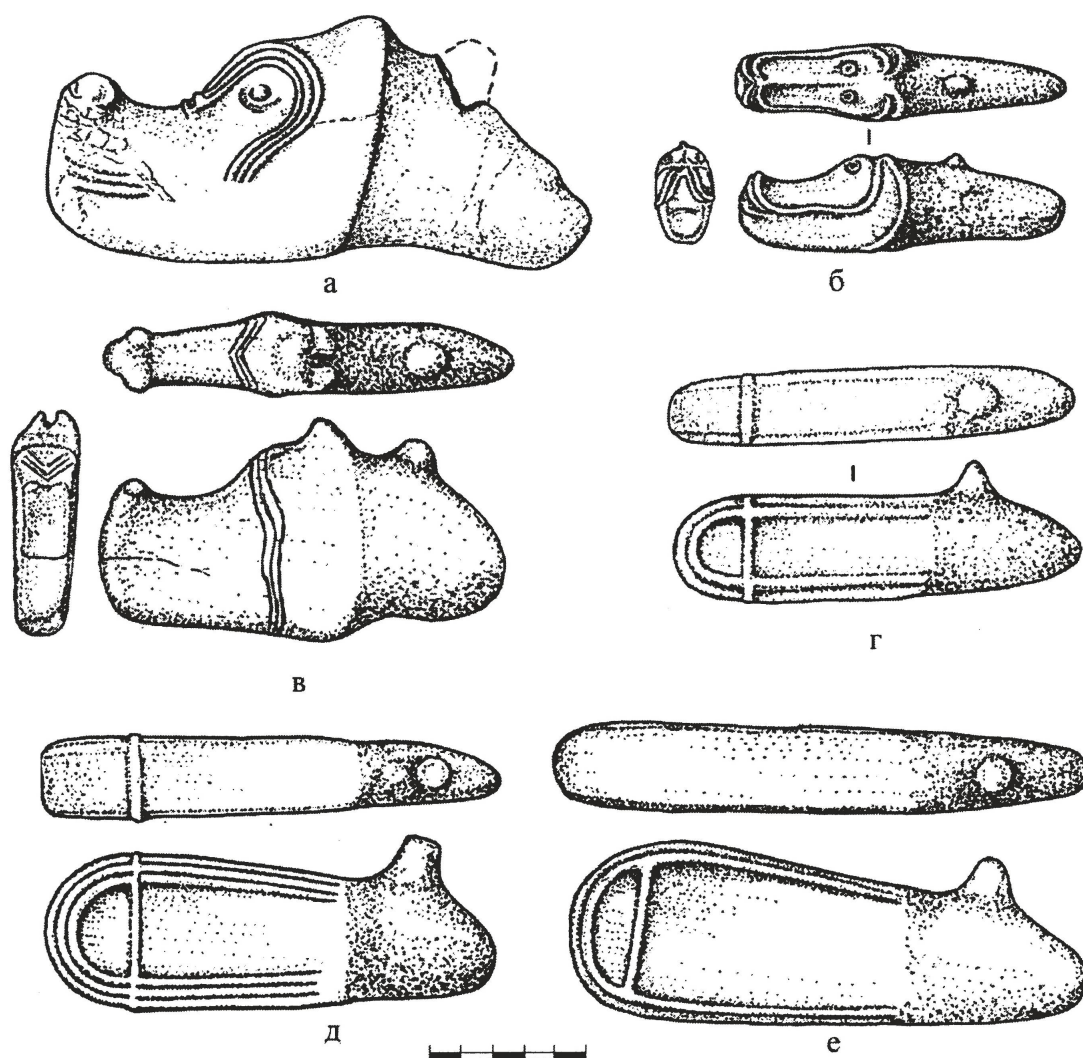
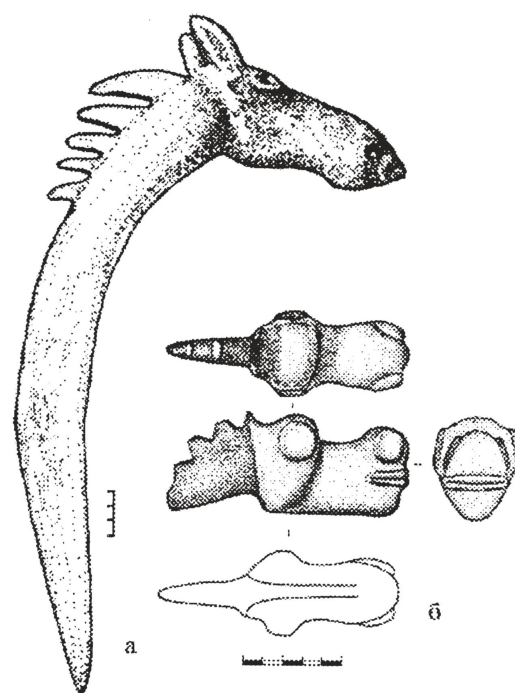


Fig. 11 Was the horse bridled? Real origin of vertical lines on the snout of the animal. Sceptres from Casimcea and others: a) Casimcea, b) Suvodol, c) Sălcița, d) Obârșeny, e) Ordjonokidze, f) Kuybyshev Museum (each drawing after Dergachev 2007).

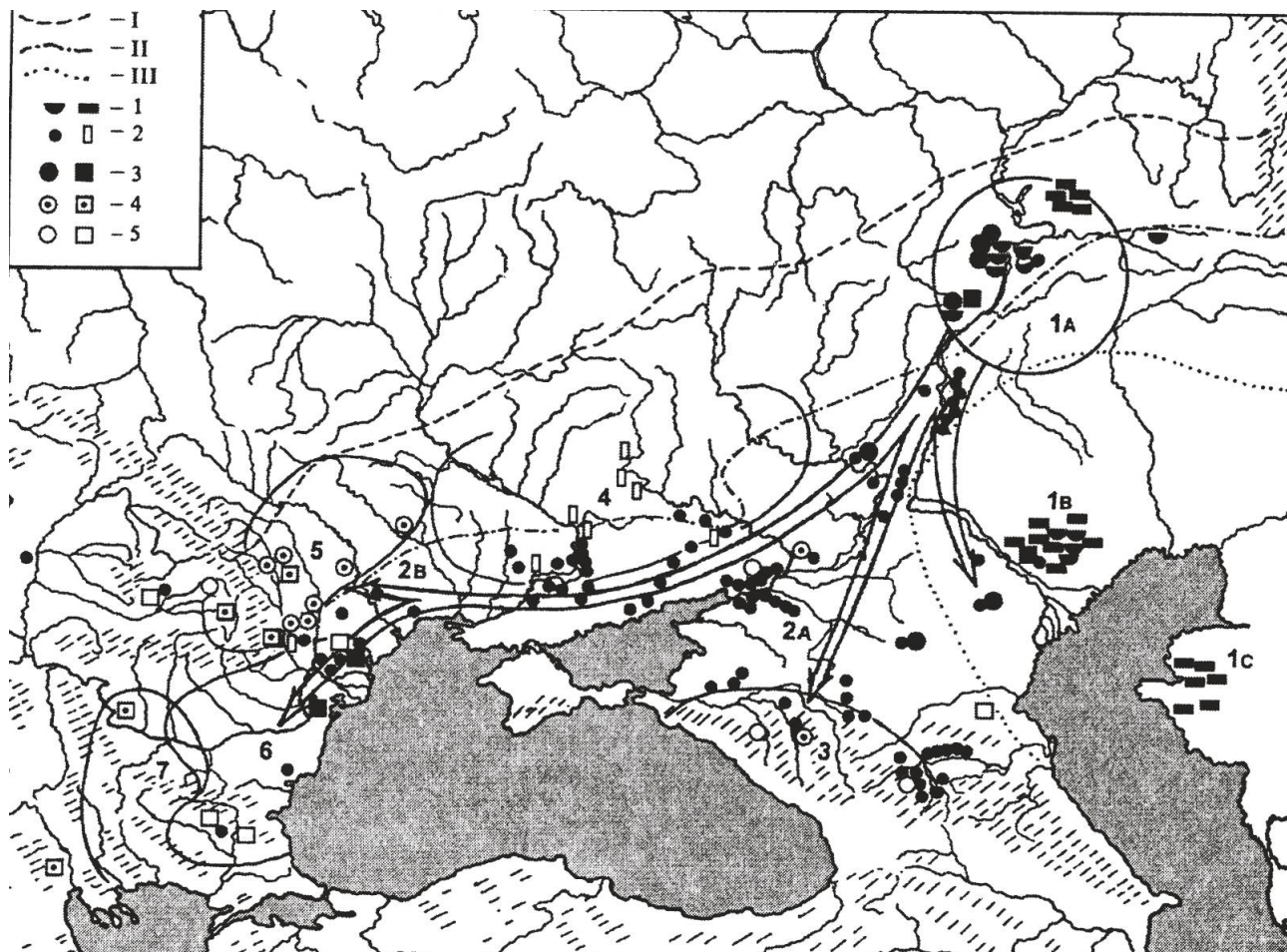


Fig. 12 Map showing the movement of the idea of sceptres from schematic to realistic ones (after Dergachev 2007). Notations: I – III northern and southern borders of the steppes and the north border of semi-desert. Signs: 1 and 2 (including small black circles) – sites of the Khvalynsk and Novodanilovka groups. Further signs of scepters: large circles – realistic, quadruples – schematic; black (3) – in burial assemblages, with point on the middle (4) – from settlements, and (5) – stray finds.

in the south of Moldavia, we must remember that the artefact from Oleneostrovsky cemetery evidently represents an elk or elk-cow and not a horse. So the protrusions on its neck cannot be the cut mane, but are either rudiments of horns (they would be difficult to carve in the chosen technology) or a detail of an imaginary animal based on an elk.

The distortion of proportions observed in a group of ‘sceptres’ in which the horse’s head transforms into the head of a snub-nosed bulldog does not accord with the image of a real horse, but the image of a mythological animal could undergo modifications much more freely. Indeed, nobody knew for certain what a real unicorn looked like. If we accept that the creators were depicting a mythological creature then there is more space for the role of imagination – and therefore for variation.

6. On the snout the vertical line accepted as a *Kappzaum* (and as if documenting the early kind of bridle) exists only on schematized, generalized depictions, and is absent on realistic ones – with one exception: on the ‘sceptre’ from Salcuța a wavy vertical line is observed at eye level. It is therefore more reasonable to consider all of these verticals not as depictions of *Kappzaums*, but rather a detail of decoration – a representation of the inking of eyes (cf. the ‘sceptre’ from Casimcea – Fig. 11, a-b).

7. What is the proof that the shaggy part of a ‘sceptre’ is really intended for affixing the shaft and not for simply holding in the hand (naked or through a cloth)?

Dergachev wants to be objective and not to advance solutions before obtaining proof. He declares: “if in historiographic part of our work we, following our predecessors, operated freely with such concepts as ‘sceptres’ or ‘rods’ as concerns category of materials in question, yet approaching the elaboration of their classification and typology we refused to use these concepts and apply the narrower term – head - instead”. Well, but the term ‘head’ implies the proved reconstruction – position of the artefact on the top of some pole, or shaft, in general of something. But why must I together with Dergachev assume this was the intended position for these artefacts? Dergachev rests upon “their constructiveness, completely evident to every specialist, rather except L. S. Klejn” (p. 151). Yet the reference to the obviousness is an argument from the arsenal of Kossinna. Numerous things (not only in archaeology) were obvious to all, but appear false.

8. The reconstructed form of the shaft by Dergachev appears not to have been seen before: a crook pole like a shaft of a socketed celt, but with a socket on the shaft’s end and vertical position of the tool. Dergachev himself declares: “neither in Eastern, nor in

South-Eastern Europe are there (at least they are unknown to the author) any other object with so peculiar system of fixing to the shaft" (p. 112). Yet just this should inspire the author to reflect on the question: is this reconstruction realistic? As one piece models one might look to crooked Palaeolithic 'chieftain's batons', but firstly those were just one-piece tools (without socket) – quite a different kind of construction – and, secondly, this was Palaeolithic – dating more than ten thousand years before the analysed objects!

9. Since these zoomorphic objects have no shafts (at least the shaft remains unproved), there is no basis for assuming they were held like sceptres. All considerations on sceptres in Homer are very interesting and fruitful, but they bear no relation to the main subject.

10. Thus, it seems that we are dealing with neither sceptre, nor horse. Consequently all inferences on social structure etc. hang in the air. Even if it is a horse, a horse cult is not necessarily connected with domestication. Cults of bear and elk existed in similar forms (Halloway 1926; Kohutnicki 1965, and many Russian works on the bear cult; for elk see Kohl-Larssen 1971) but we don't derive from them their domestication! Otherwise we should accept Palaeolithic horse as the most domestic, not to speak of the mammoth.

11. As soon as schematic depictions are viewed as most likely derivatives of realistic depictions, inferences regarding the Middle-Volga basin as the cradle of the birth of zoomorphic 'sceptres' becomes groundless. Whether it was the cradle of horse-breeding is to be solved using other data.

12. In any case the interrelationship of animal species in the herd seems to me a weak argument in favour of domesticated horses. There are too many causes which affect the composition of the herd and which might result in an unbalanced state. For instance Marsha Levine (1990) analysed the age-and-sex composition of the horse flock at Dereivka and showed that the herd represented by bones there had all the attributes of a wild herd which was created by natural forces and not a domestic herd created artificially by slaughter and selection. This sounds convincing.

On the distribution map of 'sceptres' (Fig. 12 – Dergachev 2007 map 2 on p. 147) it is seen that realistic 'sceptres' (quadruples) are mainly found in agricultural settlements (with a point in the middle) and were distributed mainly in the Karpato-Danubian basin. This is apparently the origin of this type. As they moved eastward the depictions became more schematized – it is easy to observe that the scattering of schematic 'sceptres' (circles) embraces the space of the Prut, Dnestr and Bug basins, i.e. to the east of where the concept originated. On the border with the steppe the type was borrowed by the steppe population.

However, one can assume that the mobile population group that had borrowed this type rapidly moved to the east – the type spread in the steppes of the Ante-Caucasus and Lower Volga basin, and partly in the forest-steppe Middle Volga basin, but it is completely absent on the vast intermediate territory – in the Ukraine between Southern Bug and Don basin. In the east, in the Ante-Caucasus and Volga basin, the schematized variety of 'sceptres' (large black circles) already prevailed, and they are only occasionally found in graves (only two cases in the west).

What group it was is difficult to say as yet.

Summary

1. Nearly simultaneously in the 1920s in Romania and the Caucasus stone artefacts were found which were similar to battle axes, but without shaft-holes. They represented a head of an animal. Dog, wild boar, rhinoceros and even hippopotamus were proposed, but finally it was concluded that it was in fact a representation of a horse. The dating to the middle of the fourth mill. BC was established. The artefacts were regarded and treated as heads of zoomorphic sceptres.

2. A small line on the mouth was perceived by some scholars as a depiction of a bridle, which was taken by some as evidence of domesticated horses and the early emergence of horse riding in the steppes.

3. The series of so-called sceptres has been divided into two parts: realistic sceptres in the West (in the area of agricultural cultures of Lower Danube) and more primitive abstract sceptres in the East (in the steppe's mobile population zone). This was treated as the development of the type from the east, and the whole movement was seen as in accord with notions regarding the emergence of riding in the steppes.

4. However, a single horn on the forehead contradicts the assumption that the animal is a horse. Only one animal of this antiquity possessed a horn on the forehead: the unicorn.

5. The investigation of the so-called sceptres disproves their function as sceptres. The absence of a shaft-hole does not allow the supposition that they were fixed onto a shaft. The polished fore part (the mouth) and the shaggy hind part suggests that they were held in the hand and used as a penetrating implement.

6. The confrontation of a penetrating implement with the mythical role and function of a unicorn (whose horn was a procreation implement, e.g. unicorns and the virgin) permits us to guess that the unicorn was a relic of initiation gods, and what we have before us in these objects are stone implements of defloration.

7. One should assume that the origin of these implements is found in the western part of their area of distribution, for the logic of evolution leads from realistic depictions to relative and abstract, not *vice versa*.

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BRONZE AGE HORSES: BEYOND DUALIST EXPLANATIONS

Kristin Armstrong Oma

Abstract: Horses were introduced rather late to Scandinavia, and according to archaeological evidence they arrived as part of an already existing – arguably Indo-European – package. Horses are, according to this Indo-European world view, conceived of as celestial vehicles to the supreme sun, and helpers to the sun deities. The lived reality of the horse is, alternatively, often perceived as either or both tool and walking larder. A fundamentally modern dualist world view sits beneath the creation of such clear-cut categories. However, this paper argues that a non-dualist way of looking upon the Bronze Age life world is a valid alternative. The physical reality of the horse defies such categories and is a mighty vehicle traversing many levels of life.

Keywords: Bronze Age, Europe, horse, zooarchaeology, faunal remains, cosmology, iconography, riding, travels, non-dualism

Horse power and the Bronze Age

We all know the old adage, spoken with a slurred American drawl – “the wild west couldn’t’a been won without the horse”. The same might very well be true of Bronze Age Eurasia. Since horses were domesticated on the Russian plains in the Chalcolithic (see Levine et al. 2003; Anthony 2007) they not only lived in intimate relationships with their human partners, but also facilitated a way of life previously unattainable. One might even say that human civilizations became possible because of horsepower. Regarding the Bronze Age, Pita Kelekna states that ‘The mobility the horse conferred was of unquestionable significance for transport, trade and war, facilitating interaction between areas where no prior contact existed’ (Kelekna 2009:166; see also Harrison 1980:55, 67). However, in this article I will look into the narratives that archaeologists tell of horses, and try to get a glimpse of the fleet foals behind and beyond those myths and discourses. Rather than categorizing horses as belonging to one or another kind – economic or cosmological – I here intend to pursue a non-dualist perception in order to appreciate the whole horse. Ian Morris (2000:27) suggested that pots and poetry were used by the same people and therefore have to be studied within the same framework. So also for horses; they were partners, ridden, eaten, made into art and symbols. To fully understand their position an inclusive point of view is needed.

The European Bronze Age was a period of rapid changes, of intense networking and transmissions of ideas; this has led some to postulate that Bronze Age people were the first Europeans (e.g. Kristiansen & Larsson 2005). Ideas do not travel unaccompanied through the ether, they are spread by travellers. Our way of accessing those ideas is through material remains, among other things beautiful objects in precious metal (gold and bronze) adorned by symbols, enticing by their very mysterious nature. Kristiansen and Larsson (2005) suggest that such objects embodied the myths of the Bronze Age cosmology, and refers to them as symbolic transmitters. Attempts have been made at teasing out the meanings of those tantalizing symbols – interesting in this respect are studies by Kaul (1998, 2004) in which the role of the horse is investigated according to the myth of the journey of the sun. Kaul holds that the horse pulls the sun across the heavens at noon. Horses are often found in iconography in different contexts, on rock art and pulling model chariots. The horse was given a special role in Bronze Age cosmology (Østmo 1997, 1998; Kaul

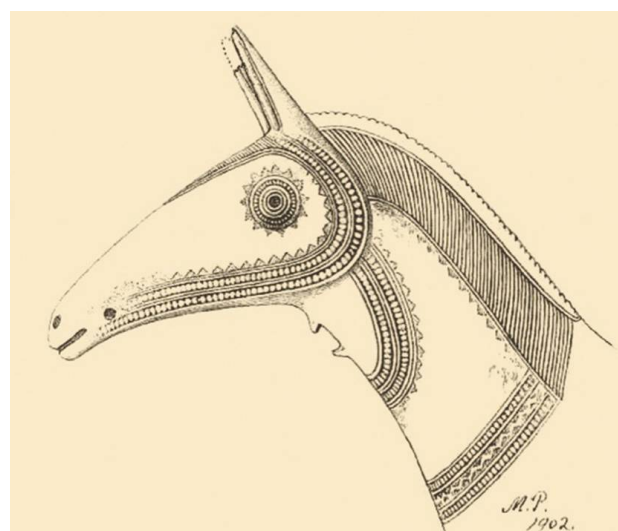


Fig. 1 The head of the Trundholm horse blends mythological and realistic traits. His eyes are portrayed as the radiating sun, whereas his pricked ears signal attentiveness and the ornamental bands and indentations by the mouth are markers of horse tack. From <http://guderoggrave.dk> Drawing from 1902 signed M.P.

1998; Goldhahn 1999; Melheim 2008), possibly partly induced by the fact that horses provided mobility.

The unearthed objects were physically transported, sometimes to far corners of the world, away from their place of origins (for example, the identical cultic ‘drums’ found in Balkåkra in Sweden and Hasfalva in Hungary (see Knape & Nordström 1994; Kristiansen & Larsson 2005). How were these objects brought from place to place? Innumerable ship carvings on Bronze Age rock art show us that the sea route and water ways, rivers and lakes were very probable contenders (although few Bronze Age ‘ships’ have been found so far in Europe, for example the Dover boat), but travel across land must also have happened. It is very likely that the carrying of goods over land was done not solely by people, but by their animal partners. Evidence of roads with sufficient foundation to support carts is scarce (if present at all), which leaves us to conclude that caravans of animals such as donkeys,

cattle and not least horses, are more probable candidates (Harding 2000:165-167). The importance of the horse can be understood from how it materialized and enabled the transport of people and goods, and also facilitated the warrior lifestyle considered to have been so important in Bronze Age societies (Treherne 1995; Kristiansen 1998). Although said warrior lifestyle has been fêted in the Bronze Age discourse (*ibid.*), and no doubt was a trait of Bronze Age societies, it is not a theme here, as I wish to focus on living with horses as individual beings rather than the horse as merely a weapon. The horse was so much more than another part of the warrior's arsenal.

Faunal remains and their archaeological contexts

Let us turn to the physical evidence of horses. Although introduced in the Nordic Early Bronze Age, 1700-1100 BC, horses became increasingly important in the Late Bronze Age, 1100-500 BC (Kristiansen 1998:106; Lepiksaar 1969), and were present at most domestic sites throughout Europe. Real, once living horses are attested to by their bones, although horse bones make up a small percentage of the faunal remains from most sites in Europe (Benecke 1994a). A rare instance of traces of living horses is found in the imprints of their hooves at the settlement site of Ullunda in Sweden, dated to 1100-900 BC (Price 1993:176; Harding 2000:156-157). Also, the beautifully elaborate tassels and pieces of belt from Cromaghs in Ireland are made of horse hair (see Coffey 1906; McCormick 2007:90). In the Late Bronze Age, many hoards from Western Europe contained fittings belonging to horse equipment or harnesses (Harding 2000:170). Regarding bones, in my wanderings within the discipline of zooarchaeology, I encountered methodologies referred to as NISP, number of identified specimens, and MNI, minimum number of individuals (see for example Reitz & Wing 1999). The two are different ways of counting bones and are ways to quantify animals by sheer numbers. They are a first step towards establishing number, sex, age of animals present in particular contexts – at the point of death. These methods give us the raw data by which to begin to understand the lives and deaths of the animals. However, the archaeological literature generally talks of horses (and also dogs) in a different manner, as they are domestic animals that, often, are perceived to have been given special significance (e.g. Ullén 1996:150; Benecke 1994b, Østmo 1997), and have therefore been subjected to a different tradition of study. For example, sex/age ratio is normally not used to make inferences on economic strategies with regard to horses (but see Lepiksaar 1969). This might be due to a lack of large assemblages of horse bones, but might equally result from modern notions that perceive horses to have a different status from other domesticates. In this bias we glimpse an uneasiness in the categorization of horses that goes some way towards discounting the common categorical dualism that is often seen. Inga Ullén's work is important in this regard. She makes inferences more often in terms of a more deeply felt human-animal relationship rather than considering horses in terms of economy. The archaeological record seems to support this notion. For example, at the settlement of Apalle, special deposits were found along walls and entrances to Late Bronze Age houses in which horses and dogs were deposited separately from the general scatter of more fragmented bones of other domestic animals. Based on this, a close relationship between humans, horses and dogs was presumed (Ullén 1994, 1996, 1997).

Primarily it is the depositional practices of horses compared to the other animals that seem to have given them an extraordinary, arguably non-dualist, status (Lundholm 1949; Ullén 1994, 1996), supplemented by their place in Bronze Age iconography (Kaul

1998). Horses are present in almost all Central European Bronze Age sites, although in small numbers; normally less than 5% of the animal remains (Harding 2000:136). Reconstructions of skeletons show that the horses were small- to medium-sized, and those found in ritual deposits were the same breeds as those found in household contexts (Harding 2000:135-136). Horses are thought to have been used for riding and for pulling chariots, as indicated by rock carvings from southern Scandinavia (Coles 1990:80) and finds of horse-bits (Benecke 1994a:133). Harness elements from the early Bronze Age testify to horse-riding and horses pulling chariots (Harding 2000:136), and the use of bits has been detected osteologically (Benecke 1994a:133). Horses were also utilized as a source of meat on Hötöfta in Scania (Lepiksaar 1969; see also Benecke 1994a:133), although small numbers of horse bones indicate that they were not bred for meat production. In the Late Bronze Age phase of Apalle, horses appear not to have been eaten, moreover, they were deposited separately from the other domestic animals (Ullén 1994, 1996, 1997). More forms of evidence – such as representations on rock art, objects and figurines, riding and chariot equipment and particular depositional practices – are linked to the horse compared with other domestic animals, therefore, horses are often postulated to have had a particular status in Late Bronze Age farming societies (e.g. Ullén 1996; Østmo 1997, 1998), although what the status consisted of is left unclear.

One example of an analysis of faunal remains from Bronze Age horses is the site of Hötöfta in Scania, southern Sweden, in which an unprecedented number of horse bones – for a Scandinavian site – were unearthed (Lepiksaar 1969). The faunal assemblage from Hötöfta 18°N is one of the largest from Late Bronze Age Sweden, and was analysed by Lepiksaar (1969:174-207). It was found in a cultural layer assumed to be a refuse area for a (so far, not discovered) settlement, and is believed to be representative of the economic strategies of this settlement. The species distribution shows a dominance of cattle (54.9%), followed by horse (27.3%), pig (7.8%) and sheep (7.2%). The frequency of horse at Hötöfta is high in comparison to other Late Bronze Age faunal assemblages where horses normally make up less than 5%, and testifies to the increasing importance of the horse. The head and the extremities dominate, whereas the meat-rich upper limbs and the trunk are not very highly represented. Lepiksaar (1969:188) interprets this pattern as a taphonomic bias due to an overrepresentation of high-density bones. This might be the case, but, in comparison with the skeletal distribution of cattle, the low percentage of upper limbs is notable. Meat-rich parts might have been taken away and consumed elsewhere, leaving behind the head and the lower limbs, the primary butchery waste. Ageing and sexing data are presented in the Hötöfta report as general statements (Lepiksaar 1969). The fragmented state of the bones made accurate ageing and sexing difficult. The ageing of the horse bones shows that the horses were normally butchered young, between the ages of 1-4 years. Some individuals were older, and could have been breeding, riding or working animals (Lepiksaar 1969:191). Lepiksaar (1969:191) suggests that the ageing data from the horse bones shows an economic strategy where flocks of horses were left to roam ('Weidegang'), presumably in the wild, and the flock was used as a combined 'meat on the hoof' and a source of riding and working horses, from which the household could pick the most suitable individuals and give them intensified training and nourishment. These lived until old age, whereas the rest of the flock were left to their own devices. This way of handling horses is carried out today in Iceland, and is also known from historical sources and has been suggested as a valid model for the Scandinavian Iron Age (Sundkvist 2001, 2004). If this is true, horses – with their intimate

knowledge of the wild – might be presumed to have an ontological status of special import as communicators and transcendents of realms that were difficult to traverse. Horses evidently hold this status in later periods, in the Scandinavian Iron Age (Armstrong Oma 2011).

Regarding traces of consumption, a detailed account is given of the faunal remains from Hötöfta by Lepiksaar (1969). None of the long bones from horse were intact, and the bones are described as ‘remarkably light’ showing signs of being moderately heated with some dark charred spots which, according to Lepiksaar (1969:188), could indicate that the bones had been cooked. Two teeth were partly charred. The high quantity of horse bones from Hötöfta shows, according to Lepiksaar (1969:191), that horses were an important component in the meat consumption of the household, and was not used for ‘sacral purposes’. However, if the midden is the remains of feasting, then ‘sacral purposes’ or other out of the ordinary occasions cannot be excluded for the horse bones or for the rest of the faunal assemblage.

A comparable site from the same period is the unusually formidable Late Bronze Age midden of Kirkebjerg at the site Voldtofte on Funen, Denmark. Here, too, a high number of horse bones were found, and in this midden the primary butchery waste dominated and hardly any meat-bearing parts were found (Nyegaard 1996: appendix 1). This could imply that meat-bearing parts were taken elsewhere to be consumed, or even that the large bones were used as tools. Thus horse meat might have been used for special occasions and not for the ordinary household consumption.

The Voldtofte horses were mostly culled between 4 and 9 years, and a few animals died between 10 and 20 years, however, some very young individuals are also seen. Mainly they were culled whilst in their optimum age as riding- and traction animals, whereas some were chosen to live till old age. An intensive utilization of horses as working animals is therefore unlikely, and they were probably used for their meat. Sexing was not done. Size calculations show that the horses were about the size of large ponies (Nyegaard 1996:45-49).

The site of Apalle is situated in Uppland, close to the eastern Swedish coast. It is unique due to pristine and undisturbed preservation, and gives a rich understanding of the use of space on a settlement (see Ullén 1994, 1995, 1996, 1997). In the Early Bronze Age phase of the site, remains from horses were treated no differently from the bones of other animals. However, as previously mentioned, there is a change of practice in the Late Bronze Age phase. At that time, horse and dog bones were deposited separately in small pits of no particular internal structure outside of the individual houses. These are taken to be refuse pits, isolated from the refuse deposits of other domestic animals, which were distributed over the outside areas of Apalle (Ullén 1996:151-152). Neither horse bones nor dog bones have traces of butchery (Ullén 1996:153). This depositional pattern and lack of butchering marks indicates that horses and dogs were given a special status. However, this status might not necessarily have been sacral or divine, but might have indicated that these individuals were seen as companions, and even that the species were given companion status (see Haraway 2003, 2008).

These case studies demonstrate that in the Late Bronze Age, the physical remains of horses were treated differently in different contexts. At the settlement of Apalle the bones of horses were set apart from the bones of the other domesticated animals, and

furthermore showed no traces of human consumption. Presumably the horse bones were treated with reverence due to the status of the living animal. However, at the middens found in Hötöfta and Voldtofte no such veneration is seen. Horse bones are mostly treated similarly to the other animal bones, except that at Voldtofte there is a skewed representation of the head and the extremities, and the large, meat-bearing bones are missing. At Hötöfta the bones seem to be lightly burnt, which could be consistent with barbecues and feasting rather than everyday stews. By way of a non-dualist reading of this scant data we might glimpse a pattern of horse bones being treated with respect in the living space of the settlement, but that does not mean that their flesh wasn’t eaten and discarded elsewhere. Thus, respectful treatment is not necessarily in discord with consumption of horses.

Interestingly, the composition of the flock is consistent with Lepiksaar’s suggestion of roaming flocks. Some bones testify to animals living up till old age, but at the same time young animals are also being butchered for meat. An interesting avenue for thought is what the free-ranging lifestyle lends to the lived and symbolic status of the horse – as horses lived both in the wild and also potentially in the settlement with people, they acted as go-betweens, as pathfinders. As previously mentioned, this points forward in time to the role horses are given in Scandinavian Iron Age societies (see Oma 2000, 2001, 2004, 2005 and Armstrong Oma 2011).

Celestial beings: horses in the sky

Turning now to the realm of cosmology and mythology, as represented by the widespread, and strangely geographically pervasive iconography, horses loom high in the skies. Flemming Kaul (1998, 2004) has created a cosmological schema, which is largely unchallenged but widely used (e.g. Larsson 2002; Kristiansen 2004; Melheim 2006; Kristoffersen & Armstrong Oma 2008). Through a study of Northern European bronzes, Kaul has suggested that the sun was worshipped particularly in the Late Bronze Age, demonstrated by depictions of the cycle of the sun’s voyage on objects interpreted as razors (Kaul 1998:262). Depictions of the sun travelling across the sky during the day and through the underworld during the night are, according to Kaul, representations of both beliefs and a ritual reality, based on rituals performed in real life (1998:51-52). In this schema horses are the celestial beings that pull the sun across the heavens through the day. These beings are often dubbed sun-horses and are implicitly seen as removed from life on earth. They are perceived as helpers to the sun (see Kristoffersen & Armstrong Oma 2008:60-62), in other words they are cast as props in the sun cult, arguably aides with little real substance. The sun-horses transport the sun across the heavens during day; sometimes the horse is connected directly to the sun with reins. This makes Kaul (1998:31-32) follow the original terminology of ‘sun-horse’ (Müller 1903) rather than ‘horse-pulled sun chariot’, and dismisses the notion of the horse pulling the sun in a chariot found in Northern Europe. The oft portrayed figurine of a disc pulled by a horse – a sun chariot – from Trundholm on Zealand in Denmark (Kristiansen & Larsson 2005:295, fig. 133) is the pinnacle of this symbol. The eyes of this horse shine like the sun, an illusion created by a small inscribed rays radiating from the eyes.

Beautiful as this image may be, I often wonder at the reality of the lives of horses in the Bronze Age. There are some indicators of real-life horses glimpsed behind the ornate symbolism. For example, the size and bodily proportions of the statuette probably reflect the real life horses that the bones testify to, rather small,

densely built horses, the size of a large pony. Further, the horse's ears are pricked and pointed forwards, typical for an attentive horse, one that listens. To the onlookers, this might have been an equally significant signal as the eyes-like-the-sun. Here, sun symbolism merges with the lived reality of horses, and presumably both the maker of the statuette and those intended to look upon it were intimately familiar with both spheres – and probably they did not distinguish between them.

The theme of horses pulling the sun across the sky is also recognizable in several other Scandinavian contexts, for example on rock art and, as previously mentioned, razors (Kaul 1998). Depictions on bronzes from Northern Europe are rich in representations of animals (Kaul 1998), and show substantial temporal and geographical variations on the sun theme. In addition to the horses that pull the sun, the snake, fish and bird also partake in the cyclical journey of the sun. Animals seem to have different roles concerning the different parts of the sun's journey, and they are always connected to the ship, present in all stages of the journey. Horses on razors always move from right to left, coinciding with how the sun moves over the sky (Kaul 1998:194), therefore the sun-horse belongs to the day. Night ships move the other way, accompanied by aquatic birds, snakes and fish (Kaul 1998:219).

Transformation myths where the gods take the shape of animals to achieve their power are common and seem to flourish in this period (Kristiansen & Larsson 2005:263). Kristiansen and Larsson argue that the most clearly recognizable myths are, from an archaeological viewpoint, the gods interpreted as the Vedic asvinati and the Greek dioscouri. These gods are the children of the sun god, conceived when their mother had turned into a mare and ran away from her husband, who followed her in the disguise of a stallion. The asvinati were born as foals but had, like their divine parents, the ability to transform themselves into humans (see Heesterman 1987:222). Kristiansen and Larsson believe that this myth was known throughout Europe in the Bronze Age, and see references to it far away from the believed place of origins of the myth (see also Kelekna 2009:111-112). The birth of the twin gods is, for example, believed to be rendered in the iconography of the slabs found in the Sagaholm grave in southern Sweden (Kristiansen & Larsson 2005:329, figure 152). However, other interpretations of these slabs have been made: Kaul (1998:268) sees the horses as being sun-horses whereas Randsborg (1993:107-119) interprets the slabs as representing the 24-hour-cycle of day and night. The role of the asvinati is most often identified with steering the horse-pulled chariots that drag the celestial elements of sun and moon over the sky, and is therefore consistent with the cosmological schema in which horses are helpers to the sun. Lene Melheim (2008:35-36, 2012:198) suggests that horse-shaped objects associated with metallurgy – the nozzles of bellows – testify to the transformative role of the horse in the symbolism of bronze smelting.

These examples attest to how animals were perceived as enormously powerful in the Bronze Age; the myths portray them as partaking in the creation of the universe (Kaul 1998:53; Fredell 2004:437; Kristiansen & Larsson 2005: 320). Therefore it was important to have access to the power of animals: '[g]ods take animal shape to achieve their special powers and abilities, or animals take over part of the human soul. Animals in nature are spirited' (Kristiansen & Larsson 2005:320). This way of thinking might be the foundation of the sexual human-horse relationship that may be related to the initiation of the king, and can be found in different sources, depicted on Scandinavian rock

art (Braarvig 1997; Østmo 1997; Jennbert 2001; Kristiansen & Larsson 2005:324-326), also accounted for in Hittite laws and Irish sagas (e.g. Green 1992; Braarvig 1997; McCormick 2007; Puhvel 1989:276; Kristiansen & Larsson 2005:324-328; Kelekna 2009:115).

Celestial and earthly journeys – horses coming home to themselves

Lastly, we will consider indications for travelling and transport involving horses. Various finds throughout the phases of the Bronze Age in different parts of Europe confirm that horses were involved in transport and journeying. From the Copper Age onwards there is archaeological evidence for physical travelling by carts and chariots in Central and Southern Europe, demonstrated by the wheel (see Harding 2000:165-167 for sites and references). Spoked wheel decoration on pots is thought to have had mythological significance (Harding 2000:167), creating a link between wheels used for transport and as cosmological icons. Model wagons of horses pulling chariots without the sun, interpreted as cult objects, are found in graves in Central Europe in the Urnfield period (Kaul 1998: 282; Harding 2000:167-169). The wheel itself is, however, often interpreted as a symbol of the sun in Bronze Age contexts (Green 1992:2). Harding (2000:165-167) describes a model from eastern Slovakia which represents a chariot with two spoked wheels drawn by horses, and a model of an apparently ritual cart from Dupljaja in southern Banat from the Middle Bronze Age. Rock art in Valcamonica in Italy and southern Scandinavia shows spoked wheels being pulled by animals, probably horses (Harding 2000:167). From the Central European Late Bronze Age there is abundant evidence from model vehicles of four or multi-spoked wheels (Harding 2000:168).

Harness equipment for horses attest to them pulling chariots. As already mentioned, hoards from Western Europe that contained fittings belonging to horse tack occur with some frequency by the end of the Bronze Age (Harding 2000:170). Rock art in southern Scandinavia provides evidence for riding (Coles 1990). Some have argued that horses also facilitated the warrior lifestyle arguably instituted in Bronze Age societies (Treherne 1995; Kristiansen 1998). As previously mentioned, horse bones make up a small percentage of the faunal remains from most European Bronze Age sites (Benecke 1994a), and yet the horse is often found in iconography in different contexts throughout the period, on rock art and pulling model chariots. As previously outlined, the horse was undoubtedly given a special role in Bronze Age cosmology (Østmo 1997; Kaul 1998; Goldhahn 1999). The importance of horses in everyday life can be understood from how they materialized and enabled the transport of people and goods. We see that horse meat, the cosmological symbol and the traveller each are aspects of one and the same animal. To people in the Bronze Age, there was probably no understanding or concept of the dualism created in the archaeological discourse between the celestial being and the trusty old mount whose bones we find.

Little is known of how Bronze Age trade physically took place, but animals must have played a crucial role. Pack animals in convoys may have been important in trade, rather than carts (see also Harding 2000:177). This certainly would have been an easier way to travel than having heavy carts that got stuck or broke down. It would also mean that animals were both physical and symbolic 'Carriers' (Fredell 2004). The 'Carrier', according to Fredell, is a cosmological signifier for an element that moves objects between worlds, and might be carried by human movement, or by animals, wagons and ships. Similarly, Kelekna states that the

Indo-European cosmology is evident in the Rigveda, 'the horse is carrier of the gods' (Kelekna 2009:112, see also Heesterman 1987:222-223). The importance of animals from a cosmological perspective was therefore partly based on the roles the animals played in the networks of transport and trade. Not only were animals physically carrying symbolic transmitters – objects that symbolized a pan-European cosmology – across Europe, they also embodied the ideas inherent to the symbolic transmitter (Armstrong Oma 2007:268-275). I suggest that evidence for this is found in the hoards containing horse harness equipment, where the role of horses in transport was transferred into the sphere of ritual. The 'Carrier' that made movement in space, and thus transport between worlds, possible (Fredell 2004:440-441), was in this case a horse. Consequently, horses were not only moving and crossing boundaries in a physical and practical sense, they were also crossing cosmological boundaries. Presumably, roaming horses embodied this transcendence.

In terms of horse-human relationships, the proximity between the people and horses that travelled together might have created not only strong bonds, but a sense of transcendence (see Armstrong Oma 2011; Argent in press). Riding, attested by rock art, is an intimate encounter that requires trust and openness from horse and rider both. Xenophon (2002 [1894]) famously said in his militaristic *Art of Horsemanship* that 'in danger, the rider entrusts his own body to his horse'. Thus he nailed down a central tenet in the horse-human relationship: we cannot tell horses, we ask them to do our bidding (Argent 2010, 2011:99). By their agency they choose whether or not to co-construct a world together with people (Game 2001:4). Game (2001) uses the centaur as a metaphor to establish the joint human-horse participation and creation in the act of riding in which the mutual interaction between humans and horses becomes embedded in both of them (see also Despret 2004). It is conceivable that humans, having experienced a sense of transcendence involving horse bodies and their own bodies (Argent in press), recognized transcendence as a property of the horse and extended this to the celestial bodies. Thus by merging with horses the sun was enabled to journey across the sky. Another significant aspect of the real life horses is the suggestion that they spent parts of their lives roaming in flocks, fending for themselves (e.g. Lepiksaar 1969; Sundkvist 2001). The intimate knowledge gained of the environment from this way of living would, paired with their perceptive skills, make them pathfinders. The attentive Trundholm horse, with his pricked ears, is the quintessence of the living, roaming horse, the heavenly sun-horse, the 'carrier' and pathfinder. Reality defies a dualist perception of horses – their different aspects are united in a potent and powerful being that transcended the boundaries between human and horse bodies and traversed the planes of existence.

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LADY OF THE BATTLE AND OF THE HORSE: ON ANTHROPOMORPHIC GODS AND THEIR CULT IN LATE BRONZE AGE SCANDINAVIA

Jeanette Varberg

Abstract: This article reveals a new prospect for Late Bronze Age women and their role in prehistoric religion. Studies of rock carvings conducted in the field by Gerhard Milstreu and Flemming Kaul in 2009 show that women in the Swedish rock carvings, believed to have been curiously absent, might have been there all along. However, standing next to chariots, they have been misinterpreted as warriors. The questions remain: who were they and what did they represent?

Keywords: Prehistoric religion, cult specialists, goddesses, hoards and figurines

Introduction

The following attempts to find new avenues for discovering traces of social identities and their reflections in aspects of Late Bronze Age religion in the archaeological record. Social identity is a key factor in the construction of prehistoric societies and institutions (Sørensen 1997). It is social identities which constitute the society - without social identities there is no society - and if it is possible to re-establish prehistoric social identities from the material culture, it ought also to be possible to gain a more detailed understanding of prehistoric societies, their institutions and thereby perhaps their cosmologies (Varberg 2008:273).

Archaeology can achieve a decisive understanding of prehistoric remains, that may have connection to a religious practice, by using terms from the religious science, even though the two sciences have different approaches to analysing the material. In archaeology it is still not very common to discuss prehistoric religion, but in order to provide the necessary background for understanding religious institutions it is central to this paper to position the archaeological objects in the centre of the discussion of prehistoric religion.

The concept of religion in prehistory is thus a nodal point in this discussion, and the idea of religion as a construction of several components – material culture being one of them – is key (Warburton & Bredholt Christensen 2013). Religion can very brief be defined as a communication with another world and its supernatural beings, and material culture in particular can be defined as architecture and religious objects – as figures – representing a practise in which humans can hold on to the thought of and communication with ‘the otherworld and its otherworldly creatures’ by giving it a place and a face of worship (Schjødt 2003).

The methodological and theoretical frameworks are linked to the strategies for studying interaction put forward by Kristiansen and Larsson in 2005, with an emphasis on the concept of textual and material evidence in combination, thus making it possible to define institutional contexts that otherwise would not have been open to precise interpretations (Kristiansen & Larsson 2005: 21). And, the greater the complexity preserved in symbol structures through time and space, the greater the possibility that the internal

meaning is unchanged when transformed into a regional image (Kristiansen & Larsson 2005:22).

Relevant material evidence is evaluated according to its correspondence with written evidence of the state and palace societies of the Near East and Mediterranean and the later writing down of oral songs from Ireland and sagas from Iceland (Kristiansen & Larsson 2005: 20). Flemming Kaul’s work on Bronze Age religion is first and foremost based on the ‘reading’ of pictorial scenes and iconographic symbols (Kaul 2004:27). This approach combined with textual and material evidence from the Bronze Age and later periods may prove to shape the contours of a lost belief system.

Social identity and its role in the religion is thus discussed according to social agencies, materiality and communication with anthropomorphic gods based on sacrificial hoards, graves, pictorial scenes from Scandinavian rock art and Central European ceramics, bronze figures and finally ancient myths.

Appearance of horse gear in a North European context

Since the late nineteenth century it has been made clear that horse gear is often placed in hoards with female ornaments in the Late Nordic Bronze Age. The distribution of these hoards is spread over the areas surrounding the Baltic Sea (von Brunn 1980:113; see Fig. 1).

Bronze hoards constitute a large part of the archaeological material from this period. Huge quantities were deposited in the ground, and the archaeological material witnesses a wide-ranging custom of sacrifice. The hoards are therefore central to the understanding of the societies which once left their items in the ground.

Between Scandinavia in the north and Romania in the south there is evidence of a tradition of hoarding women’s ornaments (such as belt plates, hanging bowls, neck- and ankle-rings) together with horse gear (e.g. bridlery and phalerae) during the Late Urnfield- and Early Hallstatt periods (1100 -500 BC) (von Brunn 1980: 126).

Research conducted by von Brunn (1980) shows a clear tendency towards a social practice including women, horse and wagon in



Fig. 1 Map showing the distribution of hoards with horse gear in Northern Europe based on finds in Fig. 2 and von Brunn 1980, Circle: hoards with female ornaments and horse gear. Square: hoards with female ornaments, male attributes and horse gear. Triangle: hoards with horse gear. Star: Hoard with male attributes and horse gear. Graphics: Ea Rasmussen, Moesgård Museum.

the Late Bronze Age between the rivers Elbe and Weichsel in Northern Europe. His study included 206 bronze hoards with female ornaments, and 58 of them included horse gear as well. Only 29 hoards also included items belonging to the male sphere – such as sword, spear or axe – and only one single hoard consisted of only male items and horse gear (von Brunn 1980: 131).

I have conducted a similar study for the Scandinavian Late Bronze Age material which reveals similar patterns. The study demonstrates that 35 hoards and five graves with horse gear can be identified through the literature. 19 hoards included women's ornaments and horse gear, and only six included both male and female items. Not a single find consisted of only male items and horse gear. In total, 27 hoards were from the Danish area and eight from the Swedish. However, in the grave material the picture is slightly different: only one of the five graves can be regarded as female and the other four are male burials (see Fig. 2).

Often the horse equipment was placed in hoards in pairs, and it is very possible that it reflects horse gear for a pair of yoked horses (Pare 1992; Thrane 1975). The horses were probably drawing a four-wheeled wagon or a chariot which broadly can be described as ceremonial vehicles based on the finds of wagons from the Urnfield and Hallstatt periods and pictorial scenes with chariots on rock carvings in Sweden – the chariot from the Kivik-grave and the famous Sun Chariot from Denmark being the best known examples (Pare 1989: 80).

Studies of a bronze staff found in a male grave nearby Norby in Schleswig dated to c. 1500-1300 B.C. suggest that it was used to spur draught horses; in Latin the item is called a *stimulus* (Kaul & Randsborg 2008). This kind of object is also known from the much later Villanova Culture in northern Italy where two bridles were found together with a similar *stimulus* in a grave near Bologna – making it hard to dispute its purpose of use (Pare 1992: 192). With the same date as the grave in Bologna is the Danish urn burial

Find-place, object number & dating	Horse gear	Female equipment ornaments	Male equipment weapons	Hoard	Grave	Country
Løvebjerggård, Bybjerg mark, Oure parish, Frederiksborg county. NM B 14505 Per. V	11 phalerae, 1 complete and 1 semi-circular bronze tube, 2 half's of horse bits with bronze rattles.			X		DK= Denmark
Lille Villingrød mose, Esbønderup parish, Frederiksborg county. NM B 14421 & 14521-27 Per. V	10 phalerae.			X		DK
Hanemose, Nørre Hyllinge, Hyllinge parish, Voldborg herred. NM MCCCXCV Per. V	12 phalerae.			X		DK
Østrup Mose, c. 12 km North of Roskilde. Per. II	2 horse bits made of ornamented antler.			X		DK
Birkendegaard, Værløse parish, Holbæk county. NM B 293-95 Per. V	6 phalerae & 1 bronze vessel.			X		DK
Jordløse, Jordløse parish, Svendborg amt. FSM MI 194. Per. V	2 bronze rattles.			X		DK
Assens area? Odense county. FSM CM 192 Per. V	2 bronze rattles.			X?		DK
Skjerne, Maribo county. Per. V	Fittings for a wagon in a shape of a bird.			X		DK
Gerlev, Gjerlev parish, Horns Herred. North-zealand. NM B 3173. Per. V	1 big chain of bronze rings and bronze rattles.			X		DK
Frejlev Forrest, Musse herred, Lolland. NM B 551-52. Per. V	4 chains with bronze rattles.			X		DK
Kindstrup, Gjelsted parish, Odense county. NM B 5882. Per. V	2 bronze rattles.			X		DK
Handst, Glenstrup parish, Randers county. NM 5675/ RAM 3290-92. Per. V	Several halves of horse bits with bronze rattles.			X		DK
Eastjutland? FHM 3227 Per. IV-V	1 horse bit and 1 decoration plate.			X?		DK
Lavring Mose, Østed parish, København county. Sted nr. 2.06.10 Journ. Nr. 444/73 private owner LBA	Decoration plate?			X		DK
Lommelev, Nr. Kirkeby sogn, Maribo amt. NM 18899-900 Per. V	4 phalerae.			X		DK
Nymø sogn, Skåne St. M. 5097 Per. IV-V	2 horse bits, 4 oval decoration plates and 4 phalerae.			X		S= Sweden
16						15/1
Egemose, Jordløse parish, Svendborg county. NM B 1269-1301 Per. V	2 horse bits, c. 1000 nails from a wooden wagon-box and fittings – one in shape of a birds head.	Bronze spiral-thread - maybe for decoration on a wool or leather string.		X		DK
Høve, Høve parish, Sorø county. NM B CXXVIII/XXXII Per. V	2 horse bits with rattles and 2 phalerae.	Hanging bowl, belt tutulus and arm spiral.		X		DK
Turup parish, Odense county. NM B 703-5. Per. V	2 semi-circular bronze tubes & 2 phalerae.	Hanging bowl.		X		DK
Sæsing, Tårs parish, Hjørring county. NM Journal nr. 260/1 Per. IV	4 horse bits, 5 wheel pendants, 4 decoration plates and small nails from a wooden wagon box.	2 collars, 3 bronze neck-rings, 2 hanging bowls and part of a third, 3 bracelets, 1 fibula, 13 double buttons and a sickle.		X		DK
Brøndumgård, Skarp-Salling parish, Løgstør, Aalborg county. VMA 2365/73 NM B 17970-17987 Per. IV	2 wheel pendants with 4 spokes, 1 wheel pendants with 8 spokes and possible wagon fittings.	1 belt plate, minimum 2 anklets and part of neck-ring with a horse head.		X		DK
Rosenkjær/Raadenkær/Baastrup, Øster snede parish, Vejle county. NM B 12439-40. Per. V	1 golden phalerae.	1 Spiral-head gold pin.		X		DK
Tved/Stævneshoven, Svendborg parish, Svendborg county. NM B 12164-72. Per. V	21 phalerae.	1 belt box.		X		DK
Holsteinborg parish, Sorø county. NM MDXXIII – XXVIII. Per. V	3 rattles and 2 phalerae (one is missing).	1 hanging bowl, fragment of a hanging bowl and 1 belt ornament.		X		DK
Præstegården, Eskelhem parish, Gotland. St. M. 7994. Per. VI	2 horse bits, one with iron bit, 4 rattles, 2 decoration plates with bird motifs and 12 phalerae.	1 belt plate or decoration for a wagon? With 2 sets of rattles on both sides and bird-heads, 4 tubes, 1 hanging bowl and fragments from a bronze vessel.		X		S
Trelleborg, Scania. Mfd. S. 1407. Per. V	3 rattles and 1 wheel-shaped pendant.	2 twisted neck rings and 2 simple neck rings.		X		S
Västlaus, Burs parish, Gotland. Per. V.	Phalerae.	Hanging bowl.		X		S
Jönstorp/Fogdarp, NV Scania Per. V	2 semi-circular bronze tubes with twin male heads wearing helmets like the Vikso-helmets, 4 rattles and 4 phalerae.	2 fragmented lur-discs, 2 arm spirals and 1 bracelet/anklet with rattles.		X		S
Simrishamn, Scania S. 20844. Per. V	9 phalerae and a bronze tube.	Several gold rings.		X		S
13						8/5
Fangel-Torp, Torp parish, Odense county. NM B 9900-86 Per. V	3 rattles.	1 kneeling female figure, 1 hanging bowl and fragments from a second, 1 pin, 1 neck-ring with ship motifs, 2 twisted neck-rings, 1 bracelet, 6 small arm-rings and fragments of several rings.	1 celt, 3 knives and a part of a sword's blade with organic handle.	X		DK
Helleved, Normark parish, Als, Sønderborg county. Mus. Gottorp. Per. V	3 phalerae and 2 rattles.	Fragments of a hanging bowl, 2 arm spirals and a fibula.	Part of a sword.	X		DK
Magleby Nørrekjær, Magleby parish, Vester Flakkebjerg Herred, Sorø county. Per. V.	Part of a rattle.	1 hanging bowl with incised horse heads, 1 smaller hanging bowl, 1 belt plate, 3 neck-rings, 4 arm rings, 1 spiral finger-ring, 3 double buttons, part of a fibula, 1 bronze tube from a corded skirt, 1 fragment of a wheel-shaped pendant.	4 celts, 2 chisels, 5 fragments of sickles, 1 knife, 1 spear, 1 tweezer and fittings from a sword sheath.	X		DK
Svartarp, Västergötland Per.V	2 rattles and a tube with a horse head with rattle.	Belt box?	1 Spear-head.	X		S
Jørgense, Krogsbølle parish, Odense county. NM B 1502-08	4 horse-gear buttons.	1 hanging bowl, 2 arm-rings and 2 fibulas.	1 Celt.	X		
Præstegården i Härnevi parish, Torstuna herred, Uppland. St. M. 11635. Per. V.	2 wheel pendants and 12 double buttons – one was still fitted in a leather strap.	3 arm spirals, 12 pins, 1 fibula, 1 belt box, 1 hanging bowl and fragments of a second. Leather pieces.	Part of a sword-blade, 1 celt, and part of a knife.	X		S
6						4/2
Ekes, Bro parish, Gotland. St. M. 4583. Per. V	1 rattle and 5 rattles consisting of two rings cast into each other.		1 button, 1 spear-head, 1 knife and 1 awl.		X	S
Bevtoft parish, Haderslev county. NM B 20646-51 Per. IV	2 horse bits, 4 rivets and 3 decoration plates.	1 Bracelet and 20 bronze tubes from a corded skirt.			X	DK
Jordhøj, Slangerup parish, Frederiksborg county. NM 8985-88. Per. IV-V	Half of a horse bit, 2 rattles, a ring and 2 stimuli.		2 razors, 2 miniature swords, 1 knife, 1 tweezers and two double buttons.		X	DK
Annelöv, Scania Per. VI	2 horse bits - one with pieces of iron.		Razor.		X	S
Number of graves	4	1	3		4	DK2/S2
Number of hoards	35	19	6	35		DK27/S8
Number of graves and hoards in total	39	20	7			DK29/S10

Fig. 2 List of horse gear found in Late Bronze Age hoards and graves in Scandinavia.

from Jordløse, in which a *stimulus* was buried together with a bridle (Varberg 2009a:21).

These finds all together clearly demonstrate that this type of horse-drawn chariot was known in the Nordic Bronze Age (1700-500 BC). But, it also shows that the horse and chariot was not exclusively linked to women. The above evidence indicates that in the Early and Middle European Bronze Age chariots were associated in Europe with men. This, however, seems to change sometime around the first millennium BC, when women and horse become a frequent constellation in the archaeological record (primarily in hoards) for a period of time. The interesting question is of course – why?

Appearance of a cult specialist in the Late Bronze Age

Religion can be defined as an abstract way of communicating with the otherworld. That world is not perceivable for every one and the concept of religion implies that it is governed by authorities, and the will of transcendent forces is conducted through religious specialist's, which are often placed centrally in the society - as prophets, priests or even kings. In the Bronze Age the rise of new elites is demonstrated through the princely graves with rich male equipment and women buried in almost the same rich mound burials as men – some even with daggers, which can be considered a male symbol (Kristiansen & Larsson 2005:112). The term 'cult specialist' is used in this paper because it is neutral and is not imbued with presuppositions in the way that the word 'priestess' is. Kristiansen and Larsson stated that the performative nature of Bronze Age cult is evident in figurines, clay models and rock art. They further proposed that cult specialists enacted personified gods and goddesses in cultic performances (Kristiansen & Larsson 2005: 355). But is it also possible to find these cultic identities in the archaeological material such as hoards and graves? Two Danish examples may give an indication.

The Brøndumgård hoard

In the Late Bronze Age hoards of bronzes in the wetlands can be interpreted as the final action in a cult act performed by specialists. In 2004 a bronze hoard was unearthed nearby Brøndumgård in northern Jutland, Denmark. The hoard consists of women's ornaments including a part of a neck- ring with a stylized head of a horse and horse gear. The find dates to the Montelian Period IV (1100-900 BC) (Varberg 2005).

The hoard was found at the bottom of a ridge originally marking the border of a wetland area. The location of the find – in a border area between firm ground and wetlands – indicates that the hoard should probably be interpreted as a wetland sacrifice; a gift to the gods at the edge of a bog, which was considered a magical gateway between the world of the humans and the supernatural during large parts of prehistory (Kaul 2003). The natural hill slopes surrounding the wetland even set the scene of a natural theatre with several prehistoric mounds preserved on top of the ridge. Through the simple architecture of the mounds in a dramatic landscape setting they mark an apparent place of worship and for performing rituals (Varberg 2005).

Several of the bronze items in the hoard seem to connect to the constellation of women, horses and the chariot. The four-spoke wheel – like the eight-spoke wheel – is probably from a horse's harness. Thus, bearing in mind that the combination of women's ornaments and horse gear occur together in hoards in this period, the find from Brøndumgård possibly reflects a fixed practice of

a cult act. Perhaps the hoards are elements from a ceremonial procession – in which the chariot, horses and woman played a prominent part – sacrificed to the supreme beings (Varberg 2005).

In the Brøndumgård deposition, the woman's ornaments even strengthens the ties to the horse-symbolism. This is due to the stylized horse-head on the terminal of the neck-ring. In the later periods of the Nordic Bronze Age the symbolic representation of a horse-head occurs on various female ornaments such as neck-rings and hanging bowls. An example can be found in the Magleby Nørrekjær, Denmark deposition which consists of many fragmented items including remains of a horse harness and a hanging bowl decorated with horse-heads (Varberg 2005, 2009b).

A portion of the Brøndumgård objects were most likely made by the same bronze caster. This is suggested by the fact that the decoration on parts of the jewellery, mounts and horse gear is more or less identical (Varberg 2005). Perhaps the objects were meant to be a complete ceremonial outfit for a woman and her ceremonial chariot, and maybe the deposit even contains the remains of a female cult specialist's equipment, ceremonial chariot included. Was she in fact enacting a personified goddess in a cultic performance that ended with the deposition of the physical items as proposed by Kristiansen and Larsson (2005)?

The Bevtøft grave

In 1862 a stone-coffin was opened in Bevtøft near Haderslev, Denmark. It contained a nearly 3,000-year-old grave from the Montelian Period IV. The only objects that survived an amateur's inadequate excavation were 20 bronze tubes, a bracelet, 4 bronze riveters, a bridle-pair and 3 decoration plates (Varberg 2009b).

It is interesting that the oldest secure find of horse gear in a grave context in the Nordic Late Bronze Age is in a woman's grave – making the woman in the grave the first person ever found with bridles; the ultimate symbol of total control of the horse. Later on in the latest part of the Bronze Age, the horse gear once again appears in male graves, as was the case in the beginning of the period (Varberg 2009a, 2009b). That makes the Bevtøft grave unique; but why would a woman be buried with symbols that ought to belong to the male sphere?

The Bevtøft grave combined with the hoards of ornaments and horse gear only strengthens the idea of the forming of a new strong female social identity by the end of second millennium BC in southern Scandinavia – and perhaps even throughout Europe. The question remains as to whether the Brøndumgård find together with the Bevtøft grave gives us the first glimpse of a cult dedicated to a new goddess.

Iconography

In the search for other ways to determine the role of woman, horse and chariot in Late Bronze Age cult and religious beliefs, attention is now drawn to pictorial depictions and figures. The famous Swedish rock carvings from Bohuslän reveal an explosion of Bronze Age figures, giving us an insight into the cultic world of the Bronze Age people. Many of the pictured scenes are believed to show cultic ceremonies and mythic tales. Ships, footprints, horned giants and animals all interact on the cliff slopes in the landscape (Vandkilde 2011: 374). Female figures are much rarer on the rock carvings than male figures, and a clear marking of the female sex is absent other than cup-marks between the legs on rare

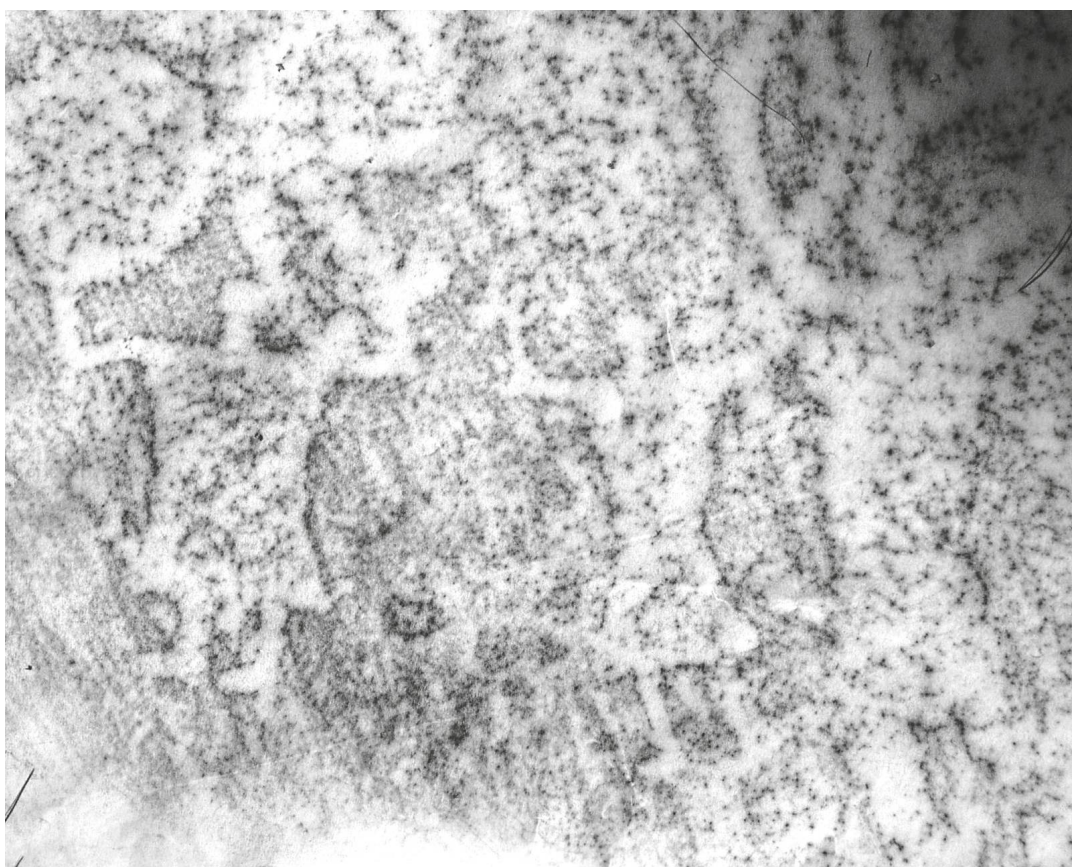


Fig. 3a Rock carving from Backa, Bohuslän, frottage by Gehard Milstreu, Tanum Rock Art Museum.



Fig. 3b Rock carving from Backa, Bohuslän. Photo: Flemming Kaul.

Find Place	Description	Hoard/ single find	Grave	Dating
Stockhult, Loshult parish, Sweden.	2 standing male figures without arms, dressed in "underpants" and hat. 14.7 cm	Hoard		Per. II
Simrishamn, Simris, Scania, Sweden	Bronze knife with a mans upper body as handle. One hand one chest, the other arm is missing. 6.8 cm.	Grave find?		Per. IV
Glasbacka, Ljungby parish, Halland, Sweden	1 Bird/human face with two arms. There is a hollow at the base, allowing the figure to be attached to a dowel. 10 cm	Single find		Per. VI
Fogdarp, Scania, Sweden	4 Bird/human faces on 2 semi-circular bronze-tubes. 1 head missing.	Hoard		Per. V
Helsingborg-trakten, Scania, Sweden	1 standing female figure. Without arms. 10 cm and 102 g	Single find		LBA
Katslösa, Kvisofta parish, Scania, Sweden	1 female figure. Naked with her hands placed beneath her marked breasts. 13.7 cm og 110g	Single find		LBA
Skt. Olufs Parish, Scania, Sweden	1 standing female figure. Naked with hands placed below the breasts. Grooved torque around the neck. 10.9 cm and 99 g.	Single find		Per. V/VI
Månstorp, V. Ingelstad Parish, Scania, Sweden	1 standing female figure. Naked with hands placed below the breasts. Grooved torque around the neck. 13.6 cm og 132 g.	Single find		LBA
Valje, Ivetofta parish, Scania, Sweden	1 standing female figure. Naked with hands placed below the breasts. Grooved torque around the neck. 9.6 cm og 104 g.	Single find		LBA
Källeberg, Timmele Parish, Västergötland, Sweden	1 standing female figure. Naked with hands placed below the breasts. 11.3 cm og 103 g.		Urne grave	LBA
Farø, Bogø parish, Denmark	1 standing female figure. Naked with hands placed below the breasts. Grooved torque around the neck. 7.6 cm	Single find		LBA
Collected in Central Jutland, Denmark by antiquity collector Hviid	1 standing male figure with his hands placed on his hips. 7 cm	Single find		LBA
Vikso parish, Zealand, Denmark	1 standing female figure. Naked with hands placed below the breasts. Grooved torque around the neck. 9.9 cm og 85 g	Single find		LBA
Værebø, Ølstykke Parish, Zealand, Denmark	1 standing female figure. Naked with hands placed below the breasts. Grooved torque around the neck. 12 cm og 133 g	Single find		LBA
Fangel torp, Fangel parish, Funen, Denmark	1 kneeling female figure. Naked with hands placed below the breasts. Grooved torque around the neck and large earrings. There is a hollow at the base, allowing the figure to be attached to a dowel. 6.5 cm	Hoard		Per. IV
Fårdal, Viskum parish, Jutland, Denmark	1 kneeling female figure with round eyes of gold foil. The figure wears a torque but the upper part is otherwise naked. The lower part is clothed in a corded skirt. The right arm is raised and the left arm holds the right breast. At the bottom is a tab for attachment to a base. 5 cm	Hoard		Per. IV
Grevens Vænge, Rønnebæk parish, Zealand, Denmark	1 standing female figure, now lost, wearing a long skirt, torque and the upper body is presumably naked and left arm is under her breast. At the bottom is a tab for attachment to a base. Drawn by Pastor Schnabel in 1779.	Hoard		LBA
Grevens Vænge Rønnebæk parish, Zealand, Denmark	1 standing female figure, bent over backwards. The upper part of the body is naked and the lower part covered by a very short corded skirt. Originally part of 3 identical figures. At the bottom is a tab for attachment to a base. 5 cm	Hoard		LBA
Grevens Vænge, Rønnebæk parish, Zealand, Denmark	1 Kneeling male figure with horned helmet, shirt and belt. One arm is missing and the left is placed on the chest. Originally part of 2 identical figures. At the bottom is a tab for attachment to a base. 10.2 cm	Hoard		LBA
Gerdrup, Kirkerup parish, Zealand, Denmark	Bronze razor with a female head as handle.		Male grave	Per. II
Javngyde, Tulstrup parish, Jutland, Denmark	Bronze knife with a female head as handle. c. 10 cm		Urne grave	Per. IV
Horne, Horne parish, Funen, Denmark	Pin with female head		Urne grave.	Per. IV
Kolindsund, Jutland, Denmark	Pendant with a female figure with bird-arms. 9 cm	Single find		LBA
Itzehoe, Holsten, Germany	A knives handle shaped as a woman dressed in a small corded skirt standing with a small vessel in her hands.			Per. V
Klein-Zastrow, Mecklenburg-Vorpommern, Germany	1 standing female figure. Naked with hands placed below the breasts. Grooved torque around the neck. 14 cm	Single find		LBA
Schernien, East Prussia, Polen	1 standing male figure dressed in a skirt and hat. On arm is raised as if throwing a nonexistent spear, the other arm is crossed over the chest. Probably an imported item form Anatolia/Syria.	Single find		Per. II

Fig. 4 List of figures found in Northern Europe in the Late Bronze Age. Sources: Aner & Kersten 1978; Baudou 1960; Fiis 1961; Gleirscher 2009; Hansen & Rink 2008; Jakob-Friesen 1967, 1969; Peruzzi 1980; Thrane 1963.

occasions, but this might be due to the fact that we don't know where to look for them, or how (Coles 2005: 35).

In 2009 Flemming Kaul and Gerhard Milstreu kindly made a new reconstruction (frottage) of a central scene in Backa, Bohuslän where a group of people stand worshipping next to three two-wheel horse-drawn chariots. The scene has been interpreted as comprising war-chariots and male charioteers dressed in special clothing for battle (Kristiansen & Larsson 2005:223).

The new frottage of the rock carvings shows an interesting detail. The carving between two of the adorants legs is a strait vertical carved line from the womb of the figure to halfway between their legs which is a clear indication of the female sex. The adorants are perhaps not all male, but female with distinct female features shown in the lower body. This suggests a new interpretation

involving female cult specialist performing in a cultic event with horse and chariot, and perhaps involving warriors.

The question of whether the dresses of the adorants belong to males or females has to be addressed. The male tunic known from oak coffin graves resembles to some degree the clothing of the figures on the Backa carving, but the nature of the stiff carving in rock and thousands of years of weather erasing information makes it hard to determine dress details convincingly. Only future studies of the rock carvings depicting males with a hanging phallus may reveal whether these male figures should in fact be regarded as females. If that is the case the number of female figures on rock carvings will increase considerably.

Scenes with women with their arms raised, as in the case in the Backa rock carvings, are also known from pictures on Central-

European ceramic vessels, the Sopron burial vessels from the Kalenderberg culture being the most elaborated (Teržan 2001; Varberg 2009a&b).

Some of the women on the Sopron vessels are standing behind warriors in single combat. The arms of the women are raised to the sky as in prayer – is that also the case in the Backa carving? In another scene a woman is standing on a wagon drawn by horses, and she is followed by a man with a spear. In other scenes they are shown in some kind of dance accompanied by lyre-playing musicians. Maybe they are part of a sacred feast or even burial ceremony (Teržan 2001:76). Again the performative nature of the Bronze Age cultures is evident across time and space. The alternate interpretation of the Backa carvings is that it portrays female cult specialists performing a ritual including chariot, horse and warriors as part of a Pan-European symbolic universe.

The likeness of the pictorial scenes from rich graves spread across Europe indeed indicates a strong symbolic communication between elites. Even though the full meaning expressed in the scenes may vary from region to region it is hardly questionable that the woman in association with the horse-drawn wagon/chariot is a strong symbol in the Late Bronze Age (Teržan 2001:83; Kristiansen & Larsson 2005:152).

There seems to be a reasonable consensus in the archaeological literature suggesting that a cult of female cult specialist's on horse-drawn chariots or wagons was highly probable in the first millennium BC (von Brunn 1980; Pare 1989; Teržan 2001; Kristiansen & Larsson 2005; Varberg 2009a&b). The next question is: can we get closer to the higher being with which these cult specialists were communicating and enacting?

Figures

A new type of artefact appears in the archaeological record in the late Nordic Bronze Age. For the first time, the small bronze figure with clear female features makes its entrance onto the Nordic prehistoric stage, with only a few exceptions of four figures from the Early Bronze Age – three of them with distinct male features. Suddenly, from Period IV they are present in the material from bronze hoards, graves and single finds. They may be among the first representations of anthropomorphic gods in the Nordic Bronze Age, as suggested by Glob in 1969. He named the small figurines the *Goddess with the Neck-ring* (Glob 1969).

In the very first appearance of anthropomorphic gods in Mesopotamia and the Near East they had clear characteristics and most importantly a name and a shape in terms of reliefs, statues or pictures. The definition of gods is: they are supreme forces that rules over humans. They are immortal, rulers, social beings and they have *shape* (Bredholt Christensen 2010:82).

There are 33 figures cast in bronze which date to the Nordic Bronze Age; 26 are preserved today, 21 of which are female figures. Of these, 12 have one or both hands under their breasts as seen in the European Neolithic and Early Bronze Age figure tradition. The 11 male figures are different in appearance, but it is worth noting that 8 male figures were produced in twin-pairs and may be reproductions of the Nordic twin gods as suggested by Kristiansen and Larsson (Kristiansen & Larsson 2005:297).

In 1900 one small figurine was found in the mud on the Kolindsund lakeshore in eastern Jutland, Denmark. Since, it has been forgotten, classified as scrap bronze. The figurine is a pendant

of uncertain use and function and it portrays a small woman with her arms raised; the arms are not human arms, but end in what appears to be bird-heads. Based on its stylistic traits the piece probably dates from the Late Bronze Age Urnfield tradition, and can be dated to 1000 - 600 BC. The only Nordic parallel to this figurine is the rock carving from Kasen, Bohuslän, Sweden. The carving shows a figure standing on a ship. The figure has raised arms in birdlike shapes. The figure and the rock carving may be part of the same tradition (see Figs. 5 and 6). Both human figures have pronounced animal features. They are shape-shifters who can enter the world of animals as easily as the world of men, an ability many Gods possess or perhaps cult specialists entering the world of Gods (Kaul 2004:342ff.).

In the Central European Alp region and on the Balkans pendants with female figures with either horseheads or what looks like bird-arms are to be found in the archaeological record (see Fig. 7).

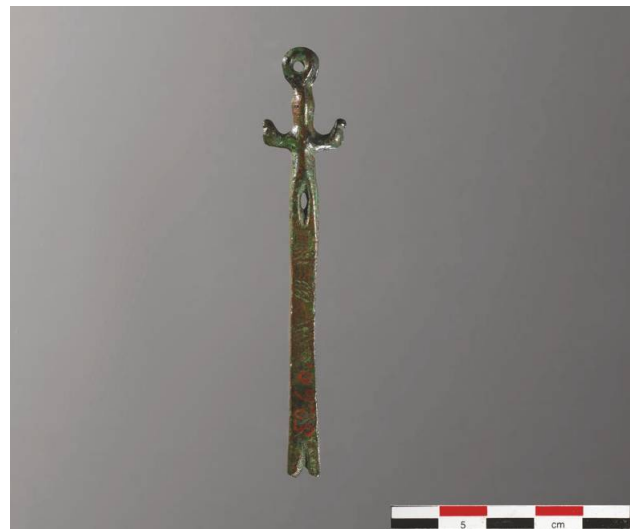


Fig. 5 The Kolindsund figure. Photo: Rogvi Johansen, Moesgård Museum



Fig. 6 Rock carving from Kasen. Photo: Flemming Kaul

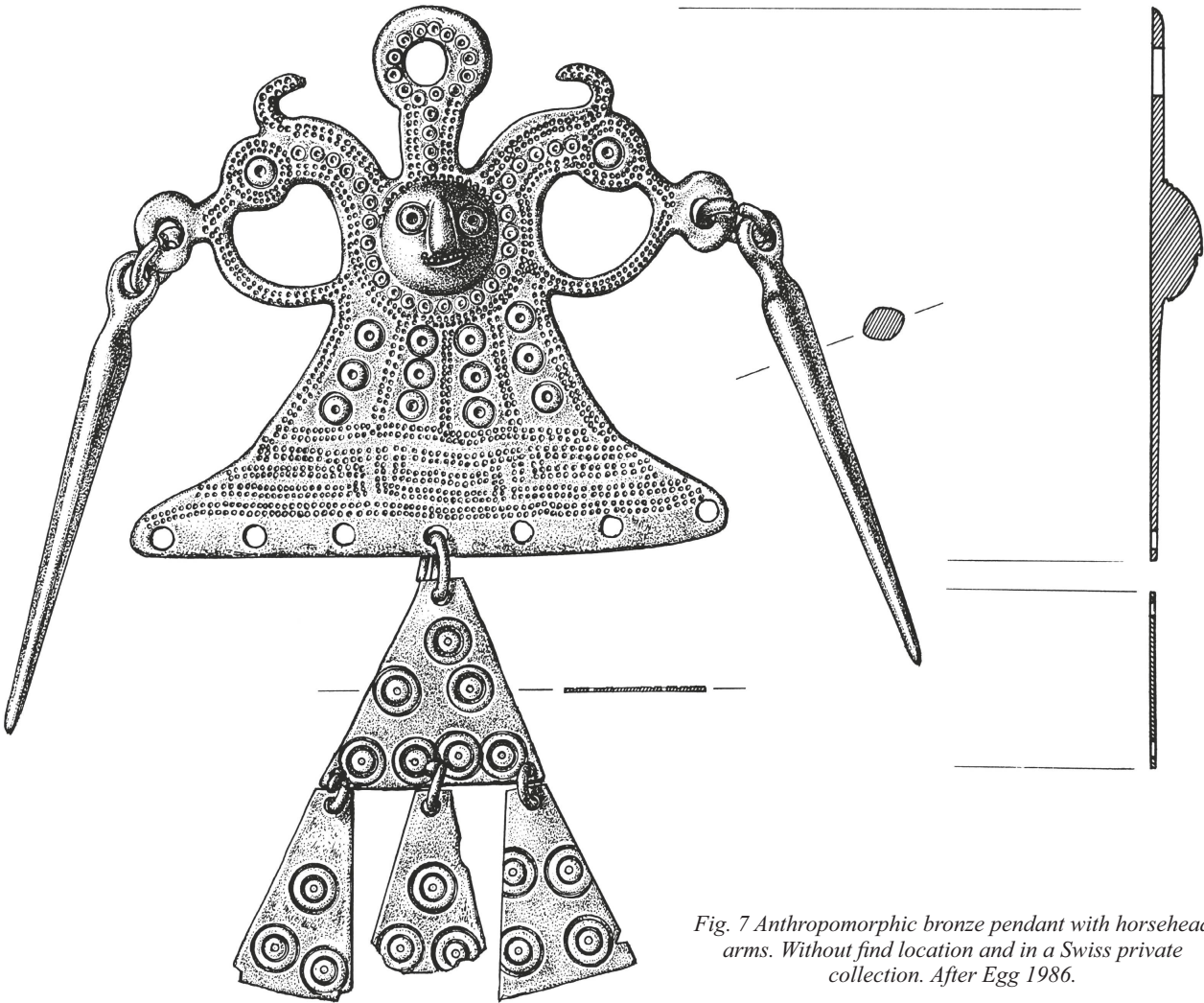


Fig. 7 Anthropomorphic bronze pendant with horsehead arms. Without find location and in a Swiss private collection. After Egg 1986.



1



2

Fig. 8 Bronze object from the Acropolis in Athens and a bone-plate from the Artemis-Orthia temple in Sparta. After Egg 1986.

Marcus Egg finds a resemblance with relief portraits of the Greek goddesses Artemis and Athena, the first being the mistress of wild animals and the second the goddess of heroes, war, wisdom, crafts and horses (Egg 1986) (see Fig. 8).

If that is the case, could the idea of a female goddess have spread through human contact and interaction across a continent and the religious symbols of the Mediterranean states thereby transmitted, transformed and adapted into the Nordic Bronze Age in the first millennium BC?

Myths and Gods in the written sources

The written sources that could enlighten the search of what religion and cult the hoards, pictorial scenes and figures may reflect are widely spread across time and space – none of them written by the societies north of the Alps in the first millennium BC, but by classical writers from Classical Greece and Rome, and later the early Christian societies on the British Isles. These text may thus very well have earlier origins in the oral tradition dating back to Late Bronze Age and Early Iron Age (Kristiansen & Larsson 2005: 22).

Between Greece and Scandinavia in the first millennium BC there could very well have been a cosmology that was not that different from the Greek pantheon. The communication between the two areas was well established and reflected in the material culture (Hänsel 2000; Kristiansen & Larsson 2005). Therefore, it is probable that fragments of the Greek and Near East cult inspired the Late Bronze Age cosmology. Consequently, there seems to be some likenesses between descriptions of the gods by written sources, the iconographic scenes in Central Europe and Sweden and the small figurines.

In the eighth century BC the Greek poet Hesoid in *Theogony* established a genealogy of the gods, and thereby the Greek Pantheon of Olympia, but the gods almost certainly can be dated much further back in time (Goldhill 2006:126). The most important goddess throughout the Mycenaean world is Potnia (mistress). She appears to be a prominent female figure in both Minoan and Mycenaean art. Mistress is so generic a designation that it is impossible to identify her with any definite goddess in the Greek religion. But in Knossian expressions she is named Athanai Potniai – Mistress Athena – and in the Pylian she is named potnaiai Hippueiai – Mistress of Horses. She is probably the predecessor of Athena, known in classical times (Peruzzi 1980: 119). Thereby the goddess Athena must be regarded as an old deity dating back in the second millennium BC and clearly associated with the horse. In archaic Corinth Athena was named Athena Hippias, the inventor of the chariot and bridle, and she had both a temple and an altar placing her as one of the central goddesses in the cult (Yalouris 1950:19). In classical times Athena was an armed warrior goddess, and she appeared in Greek Mythology as the helper of heroes and kings. Her animal-characteristics were the small owl, the snake and horse, her weapon attributes were shield, spear and helmet. She was also the patron of skilled crafts (Yalouris 1950:30).

A goddess from the Near East equivalent to Athena is Ishtar. She is called 'the Lady of the Battle' in Mesopotamian mythology and her resemblance to Athena is in her connection with battles and her appearance in eposes of heroes (Sanders 1985), as in the epic of Gilgamesh in which Ishtar wants to be his lover. He refuses with the words:

'...You have loved the stallion magnificent in battle, and for him you decreed whip and spur and a thong...'

Quote: *The epic of Gilgamesh* (Translated by Sanders 1985: 86).

Once again a goddess is linked to war and horse, and a pattern seems to emerge in the cosmological world of the Bronze Age. But the analogies are still fragmented and therefore other myths are investigated to discover whether the *Lady of the battle and of the horse* are to be found elsewhere.

The second half of the first millennium in Central Europe was dominated by the Celts. The Celtic Pantheon and mythology is depicted numerous times and some inscriptions have been found from the Early Iron Age, but the long hero eposes and myths were written down in the Early Medieval times by Christian monks in the British Isles, and therefore some of the information may have been distorted through time and space.

One of the Celtic goddesses is of interest. Epona was the 'horse-queen' and goddess of the kings. She has been depicted more than 200 times and mentioned in 50 inscriptions in the region of Bourgogne and between the rivers Donau and Rhine. She was the guardian of horses and also fairly popular in Roman cult. In Wallisian myths she is called Rhiannon and in Irish legends she is the goddess Macha (Warmind 2001:87).

In Celtic Mythology the horse goddess is closely linked with the rites of rulership, and she was the one who initiated a new king. In AD 1188 Giraldus Cambrensis told of the initiation of a new king in northern Ireland. The initiation ritual was a symbolic sexual act between a white mare and the new king. When the act was accomplished the mare was sacrificed and the meat cooked. The king then sat on the cauldron, eating the flesh and drinking the soup to gain power from the horse goddess.

The goddess, and perhaps her priestesses as well, had ritual power over the king. The horse, symbolizing the goddess, and thereby the world of the gods into which the king was adopted through a ritualized sexual act, is depicted on several Scandinavian rock carvings. The initiation ritual involving man and horse is thus apparently known in Ireland and Scandinavia, and as a consequence the ideal of a horse goddess may well have also had an influence in the Late Bronze Age cosmology of South Scandinavia (Kristiansen & Larsson 2005: 326; Warmind 2001:87).

The Lady of the Battle and of the Horse in Nordic Late Bronze Age cosmology

Bronze hoards, pictorial scenes, figures and myths all play a part in reconstructing the Late Bronze Age religion north of the Alps, and together clearly suggest that female cult specialists became more prevalent and had an increasingly important role during the Bronze Age. In other words, the role of a female deity became more significant in the religion at this time.

The Brøndumgård deposit and Bevtøft grave both suggest that a strong female social identity was emerging in South Scandinavia and along the Baltic south coast. Most probably the bronze hoards with horse gear and women's ornaments reflect a cult of female specialists with the horse and cult chariot as their main symbols.

The emergence of woman and their association with horses in the Late Bronze Age cosmology implies that a cult of personified

gods with some fragmented and distorted resemblance to the Mediterranean gods is very likely. The goddess Athena has some resonance in the iconography of Central Europe and in the small figurine from Kolindsund with bird-arms. And Athena's attributes being owl (bird), snake, horse, spear, shield and chariot may be reflected in the hoards in Scandinavia as well.

In a few of the hoards containing male attributes as well as female ornaments and horse gear, one can question whether the weapons like the spear and small sword should be associated with female attributes. Appreciating that the goddesses were often the protectors of heroes and warriors in battle, the weapons may have been sacrificed with female ornaments and horse gear as tribute. The discovery of numerous human skeletal remains, with traces of violence in several cases, dating to Period III of the Nordic Bronze Age, has made the Tollense riverbed in Mecklenburg-Vorpommern known as the earliest battlefield in Northern Europe. Leaving no doubt that warriorhood and warfare was part of society in the Bronze Age (Krüger et al. 2012) – and thereby a cult connected to battlefields.

If we presume that personified gods and goddesses existed in the Late Nordic Bronze Age, the goddess discussed in this paper may have resembled known goddesses from the Mediterranean area, but we will never get as close as naming her. She could have fragments from each of the described goddesses: Athena, Epona or Ishtar; in this case, we could name her the *Lady of the Battle and of the Horse* – war- fertility- and horse-goddess of the Late Nordic Bronze Age.

In the Early Nordic Iron Age (c. 500 BC) the hoards with both horse gear and female ornaments disappeared from the wetlands. The influence of the cult may have changed or diminished and new ideologies and perhaps cosmologies of fertility and war emerged with hoards of human sacrifices, spoils of war and caldrons as the most elaborate evidence of change. Still, the practice of sacrificing wagons continued as is the case with the two Dejbjerg wagons from the Danish west coast. Perhaps the old tradition transformed into new costumes, but the goddess of worship did not change. In Norse Mythology Freya is a strong goddess and she is similarly closely connected with fertility, wagons and war. It is tempting to see a structural link between the Viking Age goddess and the *Lady of the Battle and of the Horse*.

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BUDSENE FOR BETTER AND FOR WORSE: DIFFRACTIONS OF THE LIVES OF FARMER WOMEN IN THE LATE BRONZE AGE

Tove Hjørungdal

Abstract: The Budsene hoard, an assemblage of animal bones, female dress equipment and spiral rings in a well, represents a rare type among hoards. Period V hoards are also different from contemporary burials in terms of equipment. In this paper Budsene is therefore related to a living person, to resources, production and the life-cycle of a farm. It is suggested that the Budsene hoard presents a glimpse into the co-responsibilities of women in the production and organization of a farm in a prosperous North European setting.

Keywords: Budsene, Late Bronze Age, women, animals, production, life cycle, diffractions

Introduction

All through his career Kristian has been passionately concerned with the Danish Bronze Age. This is certainly a period with fascinating finds, an exciting history and with innovative new interpretations. Among the latter are studies of cult, ritual and symbolic aspects of woman-animal relationships (Varberg 2005, 2009). Cult and symbolic aspects are granted much space in Bronze Age contexts which recognize encounters between women and animals.

Among recent works there are also opponents to explicit cultic approaches (Armstrong Oma 2009, 2010). An aim the different approaches share with the present article is to unlock new advances in understanding women's work and responsibilities in *production* linked with farm animals in the Bronze Age, and thus with production and exchange generally. The famous Budsene well-site is seen as a context of significance for the issue of women, and for animal resources, and thus to production as a basic component in Bronze Age societies' ability to build extensive networks.

My study of Budsene is a result of reflections made in the course of 25 years of teaching Scandinavian prehistory. I enjoy the Danish Bronze Age, both in teaching as well as visiting the adored *Nationalmuseet* in Copenhagen. The academic teacher's situatedness infers the superficial in contrast to the situatedness of the expert, a scholar like Kristian who according to himself knows the Danish Bronze Age by heart. Anyway, I view the teacher's perspective as a privileged one, as it makes it possible to scrutinize one part of the subject matter at a time, and thus to notice features not often recognized (following Haraway 1988). Another vein of inspiration is the renewed concern with Danish hoards (Frost 2003; Varberg 2005, 2009; Matthews 2008) and with issues linking them to the woman-animal relationship. A driving force behind the discussion of women and animals has in turn been pioneering work on Bronze Age gender by Marie Louise Stig Sørensen (Sørensen 2000) with a significant successor in Sophie Bergerbrant (Bergerbrant 2007).

The hoard

Budsene is located in Magleby parish, Møn, south-east Denmark (Fig. 1). Here, a tree trunk was found in flowing water within a stone packing. The trunk contained dress accessories and three

bronze spiral rings, a narrower one inside a wider one, together with animal bones: horse, ox, sheep, pig and dog. The dress equipment comprises two hanging vessels and a belt ornament, all of them with the characteristic wave pattern defining Period V (900-700 BC) of the south Scandinavian Bronze Age (Fig. 2; Jensen 2006: 451). The bronzes were arranged with the narrow hanging vessel inside the wider one, which enclosed the belt ornament (NM B 8022¹; Sarauw 1903; Winge 1903; Fig. 3).

Budsene is unique in character, and the only comparison that may be claimed is the Glerup bog hoard in Jutland, with several pieces of ornament among animal bones (Kristiansen 1974). Despite some comparable traits, it is fruitful to focus on the diversity within Late Bronze Age hoards vis-a-vis substance, content and composition, modes of construction, physical contexts together with their general distinction from burial gear (Jensen 1993, 2006; Frost 2003; Maraszek 2006; Hamon & Quilliec eds. 2008).

The hoard was discovered and excavated in 1903 and was later published by Carl Axel Nordman, who interpreted the find as an offering to a water deity (Nordman 1920; Arkæologisk ABC 1972: 37f). It has also been discussed by Janet Levy (1982), and recently by Steven Matthews, who focuses on diversity within hoards, on substances other than bronze, and who has explored production aspects of the artefacts together with deposition practices (Matthews 2008: 103ff).

Outset

In the background of all of the new assessments, I suppose it is a masterpiece of irony when we, well advanced in the era of engendered archaeology, find Bronze Age Danish women to be explicitly located among the export products (Verlaeckaert 2000: 206, fig. 13.3). My discussion will therefore follow in the juxtaposition between parody and new knowledge about Danish Bronze Age women. I suggest that the Budsene hoard is to be problematized and exposed in the light of new approaches to the Bronze Age, to women and to materialities.

Prosperous bronzes and deteriorating grasslands

For the Danish Bronze Age changes in materiality are comprehensive. This is exemplified by the parallels in Period III

¹ Artefacts museum number NM = Nationalmuseet Copenhagen, B = Bronze Age.



Fig. 1 The find place Budsene.

burials and hoards while Period V hoards and burials represent a full contrast to each other (Kristiansen 1974: 26). Whether this is correct for the general setting of Budsene is unclear as few sites are excavated in Møn. The region is however known to be rich in Bronze Age sites as shown by a field survey (Rosenberg Andersen et al. 1998: 69f). Møn is also rich in hoards of various types, two of which were found close to Budsene each with a Bronze Age spear (Rosenberg Andersen et al. 1998: 70). The island of Møn also has a number of Late Bronze Age burials, unspecified as to period (Rosenberg Andersen et al. 1998: 68f).

As burials have not received much attention or analysis in the Budsene area, we can compare it with a study not too geographically distant. In particular, Bergerbrant's assessment of Bronze Age cemeteries in Scania, Lüneburg and Schleswig-Holstein comprises a Late Bronze Age study with all age groups represented in cemeteries (Bergerbrant 2007, ch. 6). The distinctive parallels in objects between Møn, Scania, and the North German area are observed, and also the Lausitz area (Rosenberg

Andersen et al. 1998: 71ff), all of the areas sharing sailable waters with Møn.

Through the bronzes and the potential contacts based on its geographical location, a first impression of Budsene is that of a prosperous setting. We know, however, that the ecological decline by Period V intensified due to overexploitation of grazing lands, all caused by the regular shift in strategy from cattle to sheep (Hedeager & Kristiansen 1988: 103 ff; Jensen 2006: 329 ff). It is in this ambiguous environment – the prosperous but threatened – that I imagine that the Budsene woman, or perhaps her relatives or her staff alone, built a construction with a trunk in water, animal body parts or bones, and her now obsolete dress equipment and arm rings.

Glimpses of the Budsene world seen from the animal bones

Animals are important in this diffraction of a farmer's setting, in its practices of production and continued existence. In current



Fig. 2 Trunk with animal bones, spiral rings and dress equipment. © Nationalmuseum, Copenhagen.

STAMMEBRØNDEN FRA BUDSENE (REKONSTRUERET TVÆRSNIT)

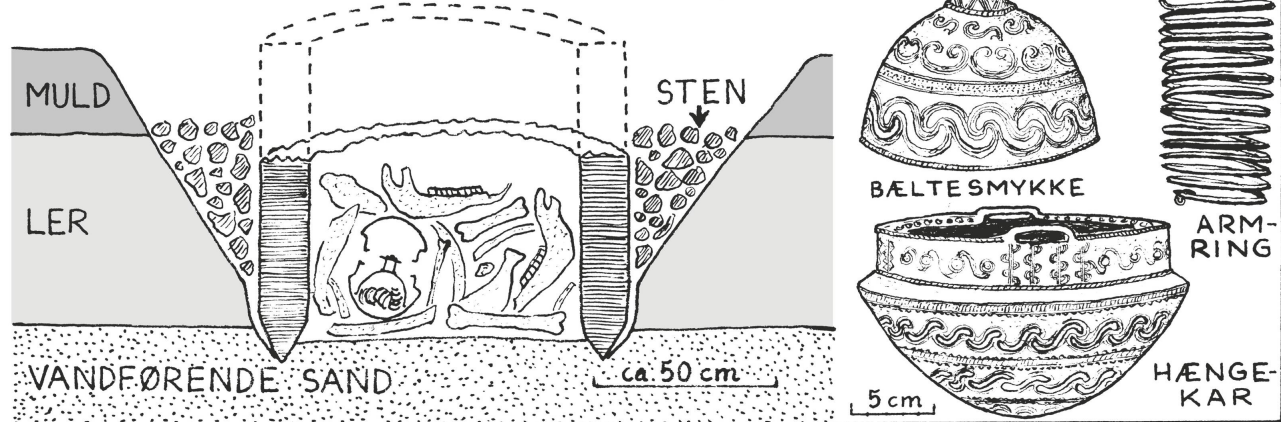


Fig. 3 A reconstruction of the trunk well with bones and items, as seen by J. Aarup Jensen. Printed with the kind permission of the journal *Skalk* from Ramskou 1964

Bronze Age studies on women and animals, it is interesting to observe a general tension which has its origins in differing theoretical discourses internationally. This is the criticism against the linguistic turn as developed by representatives of the materialist turn (Barad 2007). Both sides are represented in archaeology. Danish scholars with their focus on animals and women from a symbolic perspective relate to the linguistic tradition. The materialist turn on the other hand is recognized in Kristin Armstrong Oma's studies with an analytical approach to the relationships between humans and animals. Oma has shown how animals were embedded as a structuring principle in the Bronze Age households in south Scandinavia as active co-producers (Armstrong Oma 2010). This is an essential result to Bronze Age research in general, as it has the potential to focus on the daily life, on the production of necessities and commodities, and on the different producers and their mutual relationships. According to Oma, south Scandinavian house contexts have been an arena for knowledge about the relationships between animals and their keepers. Rock art scenes with humans and animals make up another arena. Although there are no houses or rock art isolated specifically to Budsene, the hoard is another arena where animals were embedded as a structuring principle in a household.

The Budsene site represents fragments, and not a mirror of any complete person or community. Instead we can see glimpses of them, as bones and items are parts taken from various contexts and unified in the well. As for the animals, comparative studies have shown that the relative number of animal species varied within Late Bronze Age Scandinavia (Petersson 2006: 41). The animal bones found in the hoard can be suggested to represent three categories of animals, each of which had a different and specific role in relation to humans, to production and resources. These are horse, dog and food animals. Cattle, sheep and pig are food resources, but also produce commodities (hides, skins, wool, bones and horn, dairy products, meat, fat). The horse–woman relationship is discussed by Jeanette Varberg, who takes up the cultic aspect by referring to finds and rock carvings in a comparative perspective (Varberg 2009, and this volume). A horse is also a show piece and a symbol of the farm's status and rank, an actor in travelling and moving, and a transitional symbol. The dog is a show piece, a friend, a watcher and a transitional symbol (Dommasnes 2006).

A look at the Budsene hoard therefore gives us a diffraction of Bronze Age attitudes, life and production in one specific North European farm setting. The diffraction metaphor is used by physicist Karen Barad instead of the mirror metaphor (Barad 2007). In Budsene this is suggested to signify that we see persons, daily life, production, contacts in only certain aspects, or in adjustments of aspects. Issues in the world of the Budsene people are intentionally taken up by them, modified, formed and adjusted into a local and situational discourse on farm, people, animals and production. The well-arrangement is a diffraction of important phenomena in their close and remote surroundings.

The animal bones in this well-site are arranged with other substances in their own particular way. The integration of the bones with the spiral rings and the dress equipment is therefore crucial. Rings for different parts of the body, and in various sizes, are frequent occurrences in Bronze Age contexts. For example, the famous Itzehoe knife shaft is noted as it has a woman with spiral arm rings representing a mode of wearing the arm rings (cf. Eriksson 2009 cover; Maraszek 2006/I Abb. 66, 22). Comparable situations of spiral rings on the body are known from various inhumations in Northern Europe (Bergerbrant 2007). In other

times and places, metal rings have been attributed to the notion of growing up, and to the growth and corresponding changes of size and proportions in a juvenile body. Spiral metal rings might be named rings of life, as some of the Copper Age rings have been named by Sofaer Derevenski (2000). By the presence of rings, life cycles can be related to an explicit aspect of materiality and life, as also observed in south Scandinavian Period V. The Budsene example is just one specific way of relating rings and various aspects of a life cycle, in this case by intertwined spiral arm rings of different sizes.

To continue from present knowledge about gender, age, Bronze Age dress and jewellery, it can therefore be assumed that the Budsene bronzes were removed from a woman's dress before they were deposited with animal bones and other substances in the well.

Further notes on function and areas of use of the objects should be made as well, as the hanging bowl might be a drinking bowl. In this connection, style of ornament and the references to water waves are also issues of interest. So, are these dress fittings or are they rather drinking equipment? This question is discussed by Thomas Eriksson who analysed an inventory of Bronze Age vessels (Eriksson 2009: 187f). In this respect, it might be of significance to note that by its high content of mineral salts the water in Budsene has a curative quality (Nordman 1920: 87 footnote 2). Issues of functions of vessels, and of water quality, are of general interest to interpretations of Bronze Age contexts with water, vessels and dress ornament, but belong to another discussion.

The integration of animal bones and bronzes from a female dress and body perspective presents a good opportunity to question an assumption about mainly cultic aspects. Bones have symbolic aspects, too, but represent not least everyday needs about meat and other material resources. And as the Bronze Age is characterized by exchange and contacts, there ought to have been an extensive production of goods and commodities. Animals were thus important in various aspects. The grazing of animals caused a great part of the ecological crisis. They were as such direct actors in this process of decline. At the same time they were still needed while they were producers. The role of farm animals in relation to their keepers is highlighted as an essential issue of the Budsene context. How to approach and extensively interpret the co-representation of human dress and animal bones in the well is suggested, but not a given. An ambiguous relationship between humans and animals in the Late Bronze Age can be suggested, as the animals were in a double position. They were productive and thus needed for people of the farm, but they were also an active destructive force in the environment. It is reasonable to believe that people were conscious of this ambivalent position, a position with the potential to see the development of differing practices of herding.

Diffractions of Bronze Age production

The meeting point between humans and animals is represented as a tactile node within the space of the farm, by the construction of the well room in which all of the intra-actors were physically integrated into each other's life cycles. It is suggested that we may understand the context of Budsene as the material structures of a practice linked to a specific stage in the life cycle of a woman and of the settlement of which she was a member and co-producer. We can suggest that the background was in the custom of adding specific bronzes to the body during childhood, growing up with the bronzes on the body, taking them off at a specific stage in early

adult age, and depositing them in the well in Budsene. The well arrangement is the materialization of a step in life when a woman entered into bearing the co-responsibilities of animals and farm, and the farm turned a leaf in its history of production. Aspects of rings and the life course are helpful metaphors, as they are well argued in other metal age contexts (Soafer Derevenski 2000).

The compilers of the hoard made things very tangible, and literally when the farm's new phase was inaugurated. A room was constructed with the support of different substances crucial to the on-going life in the farm. They are materials representing all of the co-producers, taken from their different bodies, from animals and from a woman's body and they became part of the landscape context. Inspired by Matthews' article on hoards (Matthews 2008), we can make explicit the fact that they represent different substances which have been integrated; metal, animal bone, earth, stone, water and wood. It is a room, enclosed, but it is open for life-giving water to flow into and through it. Animals were broken down to parts, maybe by a meal; a woman's dress deconstructed into entities, and thereby completing a deconstruction of her previous appearance.

The well was a likely place for animals to be watered, and for the people of the farm to take drinks of water. This is one further practice which connects the woman in charge of the animals with her cattle and with her relatives, by the means of physical things and structures, not least by the representations of water-like patterns on her bronzes. These were a physical continuity in a relationship vital to the regeneration and prosperity of the settlement and its people, cultivation and husbandry.

The Budsene well-arrangement can be seen as a diffraction of the lives of farmer women in the Late Bronze Age of this geographical area. It shows a prism of the resources and the production in the farm, and of intra-actions between the human and non-human partners in the farm, between living and non-living matter in the becoming of the next era in the history of the farm and its human and non-human co-habitants.

We thus capture a small glimpse into one version of this manner of life. On the basis of current Bronze Age studies, women are strongly associated with farm animals. Aspects of production in the Danish context have been discussed previously not least by Janet Levy (Levy 2008 with references), but until recently production has not been sufficiently examined as a precondition to Scandinavian Bronze Age contact and exchange. New insights make up a background to important knowledge about women's basic tasks in the production of resources from farm animals, and thus in the European Bronze Age economy at all.

The general find distribution of Period V gives the impression of mobility and it is likely that either a woman or a man moved to Møn in an alliance and partnership, perhaps as a couple that joined in collaborative charge of the farm as representatives of the next generation.

Period V depositions like Budsene can be interpreted in terms of a transitional phase where something was formed by the people of the farms, in more or less mutual collaboration, and also in conflict by deteriorating vegetation, with nature and with social and political settings. All of them - people, things, animals, ecology and the different elements of the Budsene well construction - might be seen as intra-actors of various influences on practices, and on social and political changes. The relationship between humans and animals and nature must have been ambiguous in

this case, as the traditional mode of subsistence was threatened, caused by actants among animals and nature.

Conclusion

Successful new advances to interpreting hoards, women, animals, and to production in the Bronze Age invite us to revisit Budsene. Of special interest are works by Oma and by Matthews as they go beyond symbolism and relate explicitly to various aspects of production. This also reminds us of Levy's earlier works on issues of production. A positive outcome forming a backdrop to all of these works is that the travesty of the traditional interpretation of Danish Bronze Age women can hopefully finally be rejected. Another result is that approaches placing women and animals in a symbolic sphere alone have been problematized, paving the way to further investigations. However, symbolic aspects should not be completely refused. In further discussions it is suggested that the focus should be on aspects of mutual relationships between women and animals as co-producers in the material production of goods in a farm as a part of society. In this paper I have found it essential to focus on the idea of the Budsene hoard as diffracting a world of production, resources and of the economic aspects of Bronze Age women's lives in rural Northern Europe. The Budsene hoard represents an occasion at a specific point in the life course of a living person, a woman as co-producer in a farm. Her own, new phase of life corresponds moreover with a new phase in the history of production practices of the farm of which she was, or now became, a member. The removal of the bronzes from body and dress, and the deposition of them together with parts of animals and with other components of the farm, embody the advent of a new generation as well as of a new phase in her life and in the farm's life. As the farm's next co-administrator she was co-responsible for production, most likely together with a significant male partner. The first authorized move she made in the farm was to shed the equipment she used to wear, and which she had perhaps grown up in. The practices known from the Budsene trunk-well have an additional implication. It is also integrated with the politics of meeting the consequences of disturbances in the farm's production, very much caused by the grazing of the animals themselves. As such, the Budsene deposition is the result of a stage when people of the farm, animals and the farm itself were approaching a new economic, social and political era, a new phase in their mutual history of the practices of production, network and exchange - for better and for worse.

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BRONZE AGE VOYAGING AND COSMOLOGIES IN THE MAKING: THE HELMETS FROM VIKSØ REVISITED

Helle Vandkilde

Abstract: The twin helmets from Viksø open a window into a Bronze Age world of cosmological and corporeal journeying while also shedding light on shape-changing, human-animal hybrids, and the cult and making of heroes in southern Scandinavia.

Keywords: helmets, masks, hybrids, heroes, cults, death, cosmology, mythical and epic cycles, re-enactment and transformation, journeys, sea, water, beliefs, netherworld

And Meriones gave to Odysseus a bow and a quiver and a sword, and about his head he set a helm wrought of hide, and with many a tight-stretched thong was it made stiff within, while on the outside the white teeth of a boar of gleaming tusks were set thick, to and fro, well and cunningly, and on the inside was fixed with a lining of felt. This helmet Autolykos on a time stole out of Eleon when he had broken into the stout-built house of Amyntor, son of Ormenus; and he gave it to Amphidamas of Cythera to take to Scandea, and Amphidamas gave it to Molos as a guest-gift, but he gave it to his own son Meriones to wear; and now, being set thereon, it covered the head of Odysseus.

(Murray 1946: *Iliad* X: 260-71)

The boar tusk helmet that was put on Odysseus' head prior to a nightly spying expedition into the Trojan camp was by then an outstanding piece of war gear because of the epic genealogy inseparable from the helmet itself. Despite the rich array of weaponry metal finds from the Nordic Bronze Age, there are remarkably few helmets. The paired helmets from Viksø – dating to Period IV, c. 1200/1100-1000 BC and thus broadly contemporaneous with the Homeric situation – are fairly unique. They are indeed special objects in their own right (Fig. 1), as testified by the keen interest they have attracted since their recovery from a bog at Viksø, north-west of Copenhagen, Zealand in 1942. Like the Mycenaean boar tusk helmet, they must have formed a part of rich narratives and taken pride of place among the accoutrements of warriors fighting and proving their valour, but they were so much more than that. To pinpoint the nature of this amorphous category of 'more' I will reconsider the properties of the two helmets and their cultural contexts, where the association with ships may be especially noted. It is proposed that the answer to the question of the function of the Viksø helmets might be found both in the realm of warfare and sea travel and in the ritual practices of religious beliefs.

The fact that they occur as a pair is surely significant and has together with similar paired representations given rise to the notion of twin gods in several of Kristian's writings. His varied authorship has furthermore put much emphasis on travelling. My contribution pays tribute to both these interests, by suggesting that the twins should be understood not as gods but as semi-divine heroes able to travel between worlds. I shall furthermore argue that by the Late Bronze Age a hero cult had been established.

Bronze Age research – the Viksø helmets and beyond

The helmets¹ were discovered during peat cutting in Brøns Mose at Viksø (Veksø), which forms part of a wider wetland area in north-eastern Zealand along the River Værebø, from which

numerous prehistoric offerings are known. The National Museum immediately undertook a rescue excavation that brought to light fragments of the helmets and additional pieces of pottery and wood. It was stated that the bronze objects had been recovered at a level c. 70 cm below the topsoil. The find was published by Norling-Christensen (1946a-b). He suggested that at least one helmet had been standing on an ash wood tray (or shield), but according to the archival report, the radiocarbon dates of the wooden remains thought to have derived from the so-called tray are much older than the helmets. According to the original descriptions of the peat workers, the collected sherds from a storage pot occurred at a level above the helmets and are perhaps not to be associated with them. A nineteenth-century map suggests that the 'Brøns Mose' bog was a pond or a lake in the Bronze Age; a northern extension of the present lake Løged Sø (Fig. 2). Even the overall place name 'Viksø' suggests open water: after deposition, the helmets were not likely to have been retrievable.

Even prior to discovery of the Viksø helmets debates raged about Bronze Age religion. Almgren's (1927) seminal work on rock art imagery stated that Bronze Age beliefs materialized in cultic processions to serve those forces that controlled fertility and death, and this interpretation still has relevance. The Viksø helmets have been associated with rituals and religion, while a possible association with warfare has not gained the same support (e.g. Althin 1952; Broholm 1965; Kaul 1998; 2004a; Thrane 2006 *contra* Goldhahn 2009). They have probably contributed to a keen interest in pre- and protohistoric religion (cf. Kaul 1998, 2004a; Andrén, Jennbert & Raudvere 2006).

Thrane (1990: 84) proposes the existence of a personified sun god in Bronze Age religion, exemplified by the depiction on the razor from Voel, while Glob (1969: 197) prefers 'twin gods' who personified the power of the sun. Kaul (1998, 2004a) interprets the Viksø helmets as cult objects that were used in enactments worshipping the eternal cycle of the sun. Objects and images, including those at Kivik, suggest a tripartite cosmology in which the sun travelled by means of a solar boat in the night time (Kaul

¹ SB 31 Vekso sogn, Ølstykke herred, Frederiksborg amt. <http://www.kulturarv.dk/fundogfortidsminder/Lokalitet/95258/>

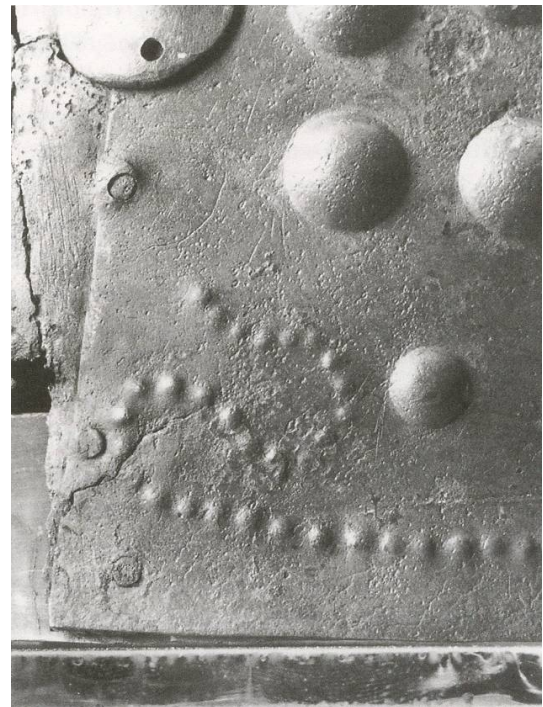


Fig. 1A: The helmets from Viksø (after Jensen 2002).
1B: A close-up of the swan-headed devices on stern and rear (after Kaul 1998).

1998, 2004; Randsborg 1993). The souls of the dead were paddlers of the ships that transported the sun through all spheres, and they were honoured in cult houses. Although initially cautious about the idea of gods in Bronze Age beliefs, Kaul (2005) later mentions a sun god who was captain of the sun-boat and states that this god sometimes had a twin appearance.

A deviant genre is preoccupied with Bronze Age eschatology. Goldhahn (2007) has researched the ritual aspect of death, as has Kaliff (e.g. 1997). In the recent study of the burial from Hvidegården, Goldhahn (2009) hypothesizes that remembrance depended on death and warfare, and the Viksø helmets are interpreted as weapons of war.

Kristian argues for a Nordic version of the proto-Indo-European myth of divine twins although simultaneously insisting that the twins were heads of Bronze Age chiefly life, an important part of which was long-distance journeys (Kristiansen 1998, 2002, 2006a, 2006b, 2010; Kristiansen & Larsson 2005). Like Ling (2008), he contends that the mythology was inspired by real journeys and that it was these expeditions in wheeled vehicles and in Hjortspring-type plank-built ships that literally made the chiefs who were honoured through the erection of monumental mounds and in the legends carved into rocks. Likewise, it is evident that pairs of identical males were significant. Kristian dubs them horned gods with reference to rock carvings, bronze figurines, and finds from the eastern Mediterranean and Mesopotamia (Kristiansen & Larson 2005: 232f; Kristiansen 2006b).

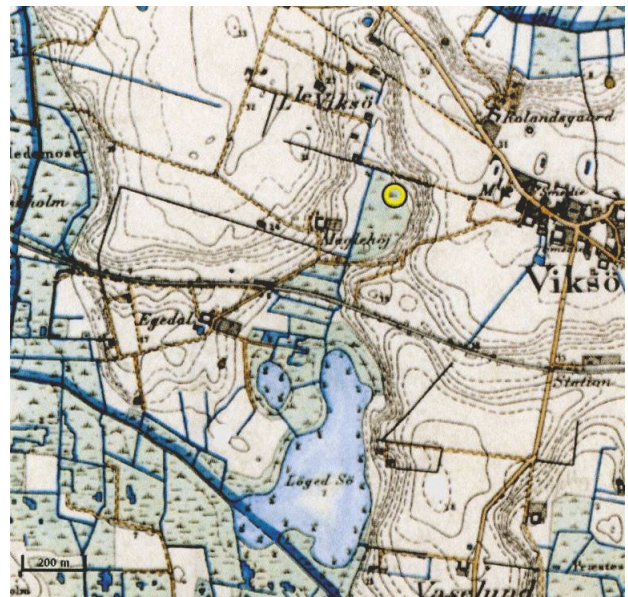


Fig. 2 The wetland area at Viksø with the find spot marked (yellow circle) on a nineteenth-century map (reproduced from <http://www.kulturarv.dk/fundogfortidsminder/> See Brøns Mose).

Epic helmets

The introductory analogue may suggest that the Viksø helmets were objects with a rich cultural biography, possibly heirlooms and gifts circulating within the Bronze Age gentry, whereby myth and legend were remembered and renewed. The Homeric epics, more generally, serve to document just how deeply a warrior ethos permeated the high-status masculine self in Bronze Age Europe and how it was mediated jointly through elaborate weaponry and epic narratives (cf. Treherne 1995; Kristiansen 2002; Whitley 2002; Kristiansen & Larsson 2005; Vandkilde 2006a-c, 2011). The Homeric quote may especially serve to illustrate in what way wearing the helmets enabled the wearer to become part of the helmets' genealogy of previous owners and attached histories; in a sense the wearer became inseparable from them. The materiality and narrative power of the helmet were transferred to the wearer.

The Viksø helmets, however, possess strong cosmological references that point far beyond Homeric analogies. The fusion of animal and human features in their design is highly significant, as are the watery settings in which weapons and cultic gear were predominantly deposited.

Helmet materiality

The Viksø helmets are almost identical and were surely considered a pair. They are made of high-tin bronze (16.8%), with low-level impurities of lead (0.35-0.95%), arsenic (0.22-0.24%), antimony (0.11-0.23%) and nickel (0.13-0.32%) and faint traces of silver (0.05-0.06%).² Their basic forms are simple hemispheres, resembling the masculine textile hats from oak-coffin burials, but also other metal helmet types of the Urnfield period (cf. Clausen 2001). The hemisphere was hammered into shape from two pieces, riveted together and secured by a heavy fitting across the top. The ornamentation included bosses of different sizes arranged in rows across the surface – a fashion employed on other items of the Urnfield period. At the front and back of the helmet, the lowest row of small bosses terminates in s-shaped figures of swan necks heraldically confronting each other: each helmet has two double-sterned ships, so-called *Vogelssonnenbarken*. The cast horns are turned in a way suggestive of a bull's horns, the twist recalling that of the lurs, which also occur in pairs. On each side of the crest is a circular fitting originally adorned with bird feathers.³ Quite possibly the crest itself was adorned with hairs imitating a horse's mane (Fig. 3) (Kaul 2010: 82). The crest of the helmets ends at the front in a hook-like protrusion, which turns out to imitate the beak of a bird of prey, possibly that of a hawk or falcon. The beak is framed by huge bulging eyes beneath distinct eyebrows: a human-like face; literally a mask or the representation of one. That the face is humanoid is supported by parallels among the figurines (Fig. 3). The helmets unite select, distinct and significant parts of animals rather than their wholes. Likewise, the human face is also represented only in part; it lacks both nose and mouth.

The wearing of the crested helmets would have considerably increased the height of the wearers; an awe-inspiring advantage in warfare and in ritual performance. The bull horns are in keeping with this, as they are often interpreted as signs of divine power and strength. The helmets are furthermore objects rich in symbolic references meant to enable a transfer of meaning and vigour from helmet to wearer: A partial human-like face fused

with strong animal features. This should remind us that today's rigid distinction between species of humans and animals is a consequence of the philosophy of the Enlightenment and that human-animal hybrids (cf. Haraway 1991; Ingold 1994) were accepted categories in the Nordic Bronze Age (Kristiansen & Larsson 2005: 324ff).

Mighty objects of transformation and transmission

The animals of the helmets refer to different spheres of the universe (cf. Kaul 2005, 2010); the bull horns pointing towards the celestial realm, whereas the suggested horse and hawk could be indicating both sky and netherworld (Green 2002, 2011). Swans conquer the sky, but are also creatures of the earth inhabiting ponds and lakes, and hence able to use their snake-like heads to look below water level into the realm below. Each animal may have been perceived as an upwards or downwards boundary-crosser from this world, or both these directions. Birds, especially birds of prey, can be seen as representatives of the human soul flying away after death. The horse is a true traveller between realms (Green 2011): like Odin's Sleipnir, able to journey back and forth between sky and underworld, most especially the latter (Hedeager 2011). Movement is further underlined by the presence of the ship for travelling. Taken together, putting on the helmets bestowed power on their wearers to move between worlds and in situations of war quite possibly enhanced bravery in combat. In short, the animal-human hybridity of the helmets was meant to transfer to their wearers.

The double character of the Viksø items as headgear and masks with hybrid features is in tune with the suggested ability to transfer exceptional power to their wearers and possibly the ability to transform into other beings or another state of existence. Through the mask or its qualities, the wearer would become someone else and was thereby able to achieve something beyond the human capabilities of everyday sociality.

There are many examples of transformations connected to the wearing of masks. Through a ritual process, each of the Avatip men in lowland Papua New Guinea became transformed into another person: initiated men put on a ritual war mask, making them capable of extreme violence (Harrison 1993). When putting on one of the Viksø helmets the wearer presumably transformed into a being with animal-human qualities. By wielding the powers of certain animals, it might have been thought possible to transfer between worlds. I will suggest that this 'being' was a celebrated hero ancestor residing in the netherworld and that the wearer of the helmet took on his identity and supernatural powers. This may recall Nordic early history where people were thought to have several 'souls' that were able to leave the body in human or animal shape. Such shape-changing was an acknowledged part of society and belief systems; a perceptual reality where some people had alter egos – a new physical shape could be taken outside the primary body (Raudvere 2004; Hedeager 2011: 81ff).

Physical-visual manifestations of Bronze Age rituals and myth

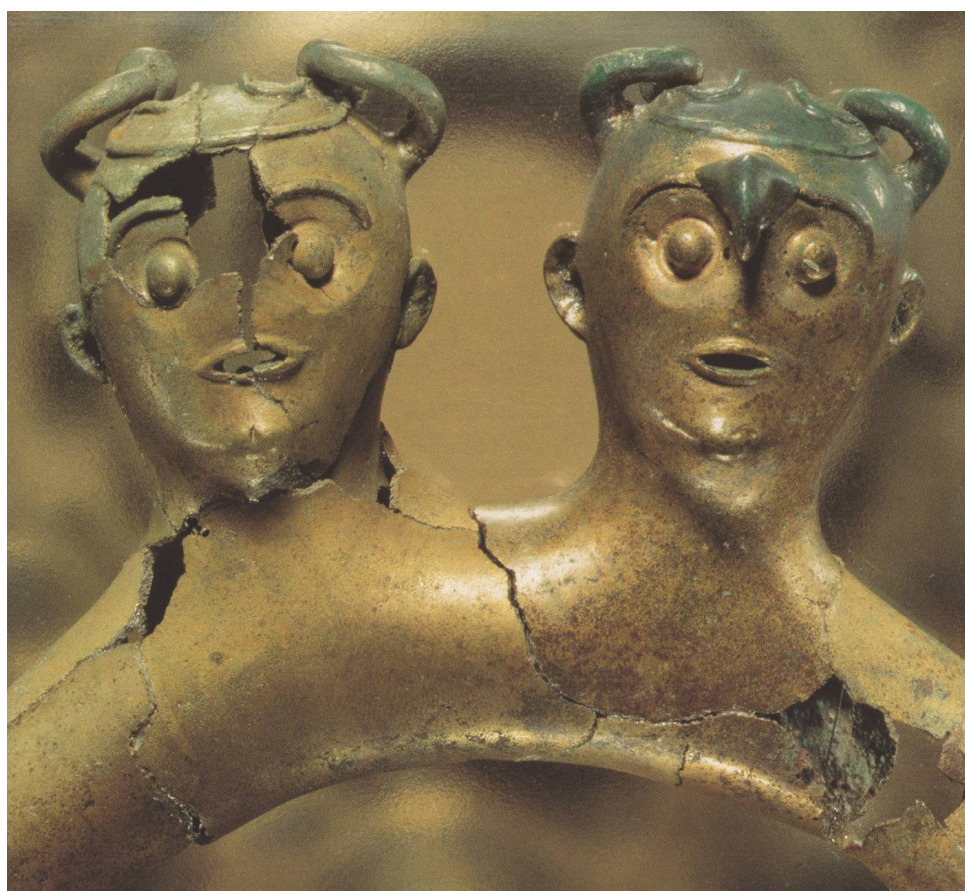
The Viksø helmets and their imagery belong to a wider complex of objects and images in which a high proportion of ships and an emphasis on horses underline the central position of journeying. One may distinguish between material presentations of mythological tales and objects used in ritual-religious celebrations of central themes in these myths, but the borderline seems deliberately blurred.

² Metal analysis undertaken by the company *Bergsøe og Søn* in 1944 and available in the archive of the Danish National Museum.

³ Archive of the Danish National Museum.



Fig. 3 The original appearance of the Viksø helmets (A) reconstructed (after Kaul 2010) in comparison with one of the Grevensvænge figurines (B) of twin horned males (after Jensen 1990) and the twins on the Fogdarp yoke (after Larsson 1990). Note their faces (C) with large eyes and accentuated eye brows.



Images and small-scale objects may refer to a mythical world of interacting animals, humans, and hybrid creatures: horned males, ships with animal sterns, human-like figures with bird-of-prey-faces, ram-horned snakes, horses with horns, humans copulating with horses, etc. Notably the imagery on razors and rock allows glimpses into this mythology of epic voyages as do the Grevenvænge and Fårdal figurines (Glob 1962; Thrane 1999) and even the Trundholm sun-chariot. Such small-scale objects were presumably meant to be carried in a procession or exhibited on a platform. In my opinion, the focus on the eternal movement of the sun (Kaul 1998, 2004a, 2005) does not exclude the co-occurrence of other themes within the same epic cycle, or even other mythical cycles. Adventurous travels within and between realms arguably form the crux of the matter.

Full-size objects – helmets, paired axes and round-shields – were worn by human actors in ritual enactments in which certain objects, animals and humans acted together in prescribed ways, as the Kivik cist allows an early glimpse of. Later, dramas were often performed on a ship deck (Kaul 2004b). The horse yoke from Fogdarp in Scania (Larson 1974, 1990) belongs here, as do the lurs. Other helmets once existed as suggested by a single horn found at Grevinge. The full-size headgear from Viksø signifying the partial bodies of an animal-human may sustain the idea that such re-enactments of mythological events should enable shape-changing connected to the transfer between realms. The enactments may then have had the character of religious mysteries in which rituals were targeted towards the transfer to other worlds. Below, I shall propose that these rituals of transformation and transfer were spliced with a hero cult and hero worship in which the identity and life of named ancestor heroes of war and adventure were re-lived through prescribed celebratory re-enactments in which their favour could be requested. These rituals were accompanied by the sound of lurs and the drinking of mead from gold bowls with horse-headed handles.

The context of the helmets supports the idea that travelling within and between the spheres of the cosmos is one key to Bronze Age myths, religion, and cults. The mortality of humans is here an inescapable and thus central issue, since death was never far away. Therefore, the notion of an afterlife and the means of ensuring it must have been prominent concerns.

Cosmology, death and travelling

Kaul's acknowledged cosmology for the Nordic Bronze Age (1998, 2004a, 2005; Kristiansen 2006a: 175ff; Bradley 2006; Nord 2009) has a basis in the so-called *axis mundi* model. Here the human world is perceived as flat with the celestial world above and an invisible underworld below. The three realms are united by a central pole enabling passage between them. There would have been numerous such world centres in that every community would have their own versions of sacred liminal points through which the other realms could be accessed. Alternative areas of transition would logically be located where the three realms met, namely at the sea shore: this would imply the attribution of special significance to water, ships, and creatures of the sea, below the surface of which the netherworld may have been thought to extend with the possibility of yet other worlds beyond the horizon. This perception (or similar) was common in pre-modern worldviews (Eliade 1957; Bradley 2000: 31), and therefore likely to have been relevant for the Bronze Age since we see the *axis mundi* model maintained in later periods (Hedeager 2011; Andrén, Jennbert and Raudvere 2006). *How is such a worldview manifested in funerary and sacrificial sources of the Bronze Age?*

Mortuary customs are in keeping with the hypothesis that death was perceived as a journey to other realms with the final destination likely to be the netherworld. Objects of profane character in burials suggest a belief in an afterlife (Green 2011: 111), which was imagined as not differing decidedly from earthly life. The mound occupied the realm of earth, but also reached towards the sky (Kristiansen 2006a: fig. 45) whereas interior constructions, including the burials, were perhaps areas of transit, not quite sky and not yet netherworld. Motion (and emotion) is integrated into both inhumations and cremations (Sørensen & Bille 2008). The deceased body was meticulously prepared for travel – in special cases clad in fine woollen clothes and accompanied by personal items, food and drink. At first the body was inhumed and later the transfer was accelerated by fire and light (Sørensen and Bille 2008; Sørensen and Rebay 2007). In the earlier Bronze Age, sun attributes were quite widespread in burials while horses, more ambiguously indicating both sky and underworld, occurred almost throughout the period as figure heads and images.

The body was sometimes accompanied by objects and images directly targeted towards ensuring a successful journey to the underworld, perhaps believed to enhance benevolent relations with chthonic creatures encountered en route. Of particular interest is a group of Period IB-II male burials with fish hooks, which match the fish hook and fish imagery in the Valsømagle hoards (Vandkilde 1996). Fish images also occur occasionally on other bronzes and on the Kivik cist (Kaul 2004a: 320ff). Fish images, fish bones, fish hooks and indeed eelgrass may have been perceived as symbolic manifestations of the underworld (cf. Goldhahn 2007: 187) or symbols intended to secure entry to the realm of the dead. The emphasis on ships in Bronze Age iconography, and the construction of stone ships for funerary purposes, is commonly interpreted as a means of transporting the souls of the dead (e.g. Kaul 2005).

Hvidegården and Maglehøj are among the best known among the so-called ritual specialist burials (Goldhahn 2007: 180ff) with their strange inclusions such as a snake tail, horse bones or teeth, a squirrel jaw, the foot of a falcon or hawk, and a Mediterranean sea snail. In a clear analogy with the imagery of Viksø, the animals represent or transgress different realms of the cosmos. The fact that these representations are of parts rather than wholes of animals may indicate a hybrid state in which the person in question – when empowered by these partial bodies – became an animal-human able to transfer between worlds. Interpreting boldly, these individuals were heads of the mysteries of transit, directing the ritual enactments taking place near perceived points of transition: at the world centre, or at the edge of the sea. Upon the death of these cult leaders, successful transfer to the other worlds was ensured through the accompanying items of their profession.

So-called cult houses associated with cemeteries are interpreted as sacred ancestral precincts (Victor 2002). Here, rituals should facilitate the transfer of the body from life to death, or even facilitate the release of the soul from its bodily existence in the liminal phase (cf. Kaliff 1997; Goldhahn 2007). This would suggest an alleged area of transit that antedated the final burial. Cult houses contain burnt debris with animal bones (including horse), burnt human bones, and bronze-working as well as other remains compatible with transformation through fire (cf. Goldhahn 2007: 279ff). The precinct may moreover have been subjected to commemorations of the dead through the consumption of ritual meals (Goldhahn 2007, 2009). In Jutland and the Danish Isles, a ritual building was erected at or near the foot of a mound

(Nielsen and Bech 2004). Finds suggest feasting to have taken place here (Nielsen and Bech 2004: 141), in commemoration of the ancestor who was first buried in the mound as well as the recently dead whose burnt bones were placed in urns and inserted into the now ancestral mound. This cult may then have targeted heroes residing in the underworld as well as a privileged class of would-be-heroic dead, in particular because of the associated horse bones and metal working. A similar worship and remembrance of ancestor heroes may have taken place in front of the rock panels where debris with the same characteristics occurs (cf. Bengtsson 2010; Ling 2008).

What kind of life did people imagine for the two horned helmets after letting them pass beyond the surface of the lake? Numerous other objects occur as wetland deposits in bogs and lakes. These wet places could well have been perceived as alternative points of passage and were likely often considered dangerous to access unprepared (Bradley 1990, 2000). It would be in tune with the argument that magnificent bronze objects were sent on the journey to the underworld through appropriate ritual. The passage through water must have been considered highly significant as weapons, ornaments and other objects became reunited with their owners now dwelling in the underworld. Extraordinary objects such as our helmets are indeed inseparable from their history; their return to their true owners would have been a natural *dénouement* (cf. Mauss 1990; Weiner 1992).

‘Gifts for the gods’ is a commonplace interpretation of Bronze Age hoards, but the presence of underworld gods in plural is perhaps not self-evident. Rather, the underworld was thought to be inhabited by humans enjoying their afterlife, chthonic creatures and accompanying individuals I would label semi-divine heroes, who during their life were able to travel between realms on an occasional basis, and who sometimes maintained this ability post-mortem. The Viksø helmets and other objects deposited in lakes were then not necessarily thought to disappear into a great watery void.

Heroes and their cults

The sources for the southern Scandinavian Bronze Age propose heroic valour as a central issue of both life and death. Awe-inspiring weapons deposited in great mounds and in watery places as well as the images carved into rock sustain this point of view:

.....travelling chiefs from the North, who instituted new crafts and new rituals upon their return. They created the first group of mythological sagas about distant and powerful origins, and in due time they themselves became local heroes, worshipped in oral tradition as well as in rituals at their famous burials, or at the panels of rock carvings describing their journeys.

(Kristiansen and Larsson 2005: 208-209)

What is a hero, precisely, then? Here, the ancient Greek world and mythology offer inspiration (Farnell 1921; Kerényi 1958; Whitley 1995; Fox 2008; Albersmeier 2009). We tend to use the term in the same way Homer did in the *Iliad*, where aristocratic warriors fighting at Troy are dubbed ‘heroes’. While this is legitimate, the above quote touches a central matter, namely that a hero is most often dead and buried and becomes celebrated only posthumously, precisely due to the fame of deeds and accomplishments undertaken during his lifetime. To a certain extent, such renowned individuals defied death, but they are mortals and therefore also role models for average living humans. They are very big, and so

are their bones, and an impressive stature is underlined by ‘special effects’ such as Heracles’ lion skin and club, Jason’s golden fleece and the ship *Argo*, the shining armour and weapons of Achilles, etc. Perilous journeys were undertaken into other worlds; some familiar while others possess immense strangeness. Such journeys were interrupted mainly to fight opponents, be they humans or hybrid monsters.

A characteristic trait during an eventful mortal life is to occasionally gain access to the underworld through particular channels of passage. Odysseus, for instance, visited Hades where the ordinary dead were mere shadows, whilst the former companions at Troy still maintained their bodily shapes because of their status as special dead, as heroes. A few heroes of the Greek mythology became demigods after death, able to leave the underworld and transfer to the world of heavenly gods, although only on special occasions, or partially. Castor and Polydeukes and Heracles are cases in point.

According to Greek sources, then, heroes are boundary-crossers in life and/or in death. They are a combination of warriors, travellers and adventurers and operate singly, in pairs or in groups. It is only after death – because of its glory and reinforced by the deeds of life – that the status as hero is granted. Long after the death of famed heroes, local cults arose at the alleged places of burial (e.g. Whitley 1995), and sometimes a regular *temenos* with cult house (*heroön*) was erected. Here, chthonic rituals were performed to worship the dead hero residing in the underworld, inducing him to bestow favour on the worshippers (Whitley 1995; Ekroth 2009). Hero cult furthermore contains aspects of venerating a grander past, an age of heroes, in comparison with peoples’ own dull present. The heroic events are themselves broadly Bronze Age in date, coming to an end with the sack of Troy.

Aegean twins and other heroes in creative translations

The essence of the Greek hero figure and associated cults aligns well with the sources to the Nordic Bronze Age; not necessarily in detail, for the cultural differences were considerable, but in broad outline. A connecting thread of support exists, namely the fondness for twin representations. The very regularity of double lookalike deposits demands an explanation: Viksø with two ships on each helmet, the Rørby ship-shaped scimitars, giant axes and the lurs as well as the recurring theme of paired males at Fogdarp, Grevensvænge and Stockhult, on razors, and on rock carvings. That they are twins is suggested by the fact that each male is a mirror image of the other in posture, war-like attributes, and double symmetrical ships. However, were they heroes according to the above description?

I will argue for a yes. Kristian tracks the twins to a proto-Indo-European myth of divine double rulership (e.g. Kristiansen 2006b, 2009; cf. Ward 1968). I am sceptical towards the assumption of their combined status as gods and as political and religious rulers in Bronze Age Scandinavia although the twins’ bellicose attributes, stereotypical appearance and association with ship and horse do suggest a shared legend. In tune with the imagery they were clearly warriors engaging in fighting, they were travellers on board a ship, and the adventurous character of the whole enterprise may be implied. Counting on the correctness of Kaul’s reconstructed solar cycle, they were also able to transcend the realms of the universe. The horned helmet combined with a large axe is a particularly indicative trait (Figs. 3-4), easy to recognize for the audience, and it bestows an aggrandizing effect upon an

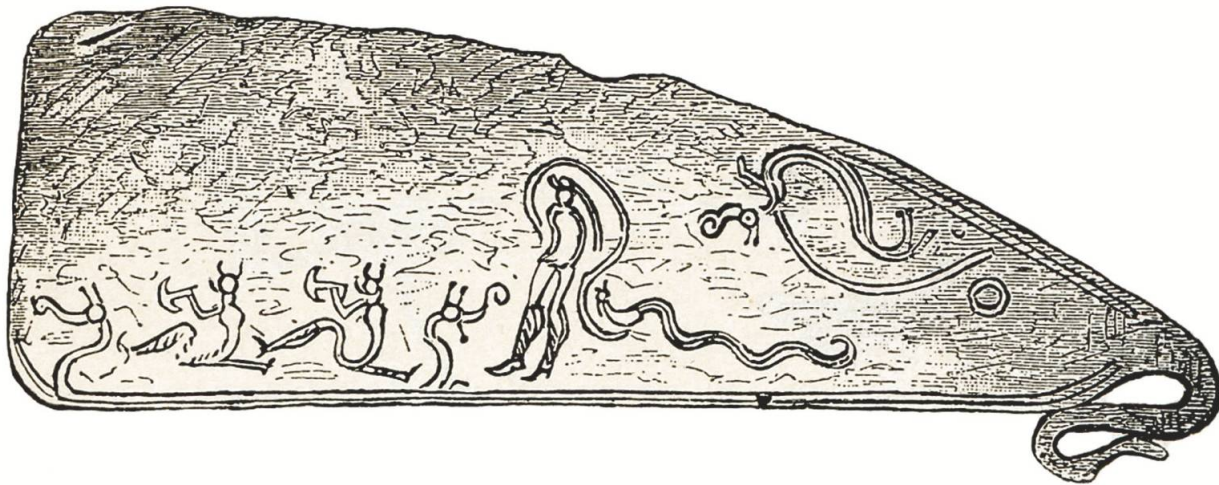


Fig. 4 The horned and axe-wielding twins aboard a ship with horse-headed stern and rear, a horse for each hero, on the razor from Vestrup. The twins are pursued by an over-sized human figure and a big snake, with other animals and cosmic (?) signs nearby (after Glob 1962).

already-oversized body with accentuated calves. These traits and ‘special effects’ recall the characteristics of a hero.

This Nordic twin existence is strikingly similar to Castor and Polydeukes (Dioskouroi), the twin heroes popular among the Greeks (e.g. Kerényi 1958). One had a partly divine origin. Zeus came to Leda in the shape of a swan (!) and she bore two sets of twins: Helen and Polydeukes to Zeus and Castor and Klytaimnestra to her husband. Importantly, the Diskouroi lived a mortal, though adventurous, life and are often depicted identically on horseback wearing broad-brimmed travellers’ hats. They were in fact considered protectors of seamen and sea voyages, and were furthermore often associated with horses (Buxton 2004). They went on their own adventures, but also engaged in other endeavours such as the sea journeys of the Argonauts. This actually corresponds well with some Nordic rock carving scenes in which twin figures can be discerned among groups of fighting males near long-ships, animals and sometimes strange beings (Fig. 5). In between them, ambiguous signs may refer to different spheres of the universe (sun, bird, wheel, hand, feet etc.) (Kaul 1998, 2004a, 2005; Goldhahn 2007). These cosmological components fit well with the story of the Dioskouroi, who died while on a cattle raid. Afterwards, one twin was confined to the underworld, while the other was allowed to visit the celestial gods. The animal-humans with bird-of-prey faces on the rock carved panels, however, suggest an animalistic shape-changing element of transformation, which is vague in Greek myths and seems indigenously Nordic.

The Nordic images are not exactly focused on twin heroes with horned helmets. Singular figures of huge size or unusual strength also occur who are captains of ships or can lift a long-ship with one or two hands (Fig. 6), and these bear a great resemblance to the accomplishments of the physically powerful hero Heracles, who was able to escape the underworld in life as well as in death. In other situations, larger groups of males are shown in the rock carved scenes (Fig. 5), as when Greek heroes joined forces to overcome a perilous challenge as in the story of the Trojan War.

The Nordic epic cycles incorporated central heroic figures who travelled, warred and experienced incredible adventures within

and between realms of the cosmos. Many pictures, however, depict only the manned ships as if the rest of the story is deliberately left out. Ling (2008) has shown how such ship-only carvings occur primarily at the edge of the sea, only visible from the seaside and carved where water touches rock (Ling 2008). This was where the realms of the cosmos were, arguably, believed to meet and therefore a sanctified border zone: here between land and sea with access to other worlds long-ships were repeatedly carved. The central significance of the maritime component in life and death (Bradley 2006), and in between, thereby becomes still clearer.

Returning to Viksø: Myths and cosmologies in the making

For Kerényi, mythology is ‘a body of material contained in tales about gods and god-like beings, heroic battles and journeys to the Underworld’ (Jung and Kerényi 1985: 3). Reality, nevertheless, mattered in myth-making as inspirational material. Creative resources were likely extraordinary objects, ritual events, warfare and bravery, adventurous expeditions, long-distance travels, and the natural environment of animals and particular geographies. Archaeological sources broadly suggest, as argued above, that death was perceived as a perilous sea journey to other realms, eventually to the netherworld where an afterlife was envisioned even if access to the celestial realm may have been hoped for. This belief must surely have been deeply rooted in the world of the living. The sources are themselves indicative of the experienced entanglement of the profane and the sacred, indeed of life and death, in the minds of Bronze Age people. As scholars we can take the liberty to analytically keep those domains apart, and now turn to the social reality of long-distance travelling. Again, the Viksø helmets, and horned helmets as such, take centre stage, coupled with the insight that providing the raw materials for bronze was necessary for social interaction in southern Scandinavia.

The Viksø helmets fuse Nordic and Urnfield features and were produced in Scandinavia while European bronze-working techniques were employed. The swans of the ships’ rears and sterns reproduce the swimming bird symbol of Urnfield Europe (Kosack 1954), but most other features tally with a Nordic Bronze Age setting. The helmets were used in rituals, but likely also belonged among the paraphernalia of war leaders, along

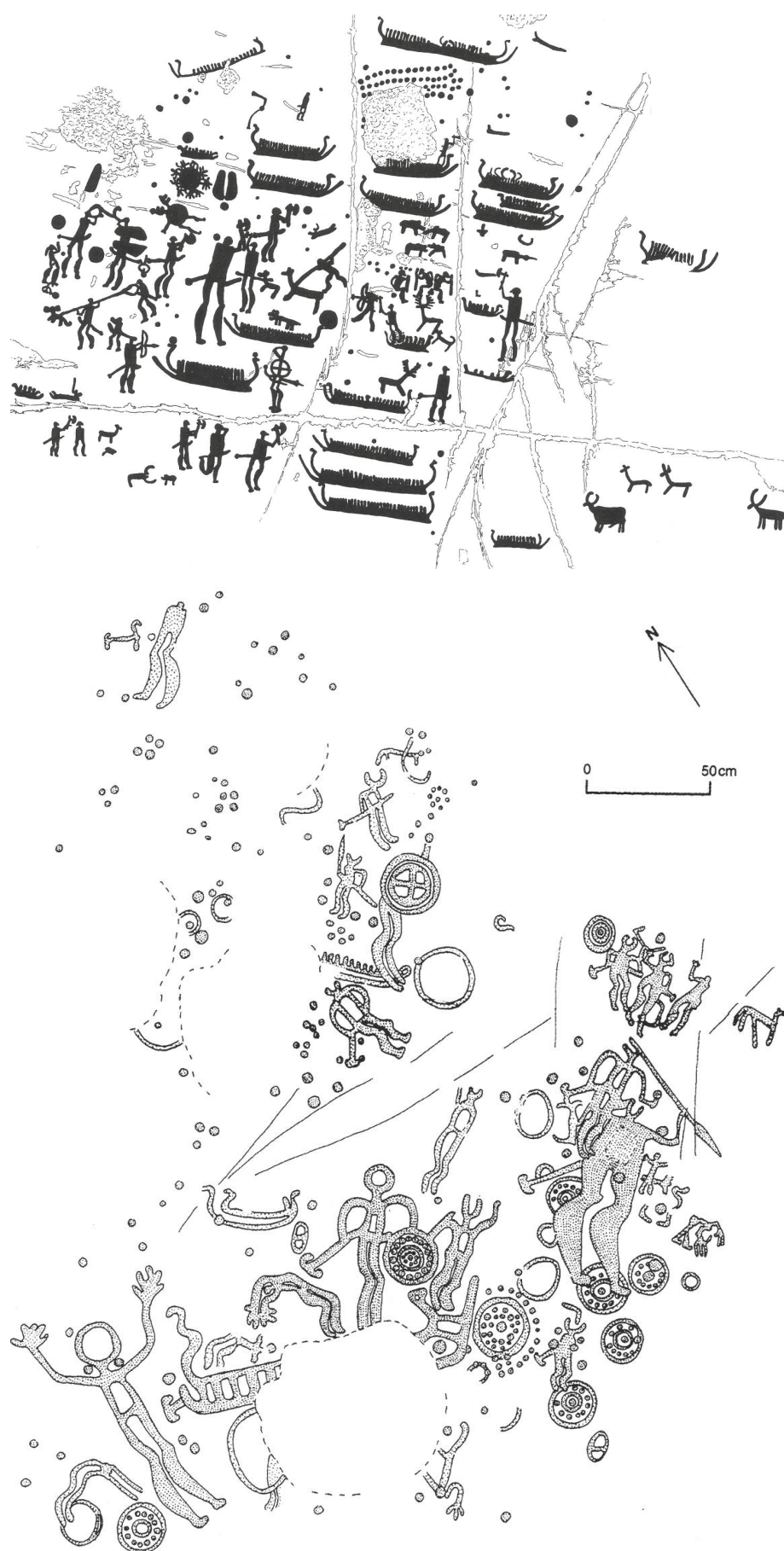


Fig. 5 Rock carving scenes from Tanum 255 (A) and Kville 124 (B) showing complex events with several fighting warriors, ships and signs (after Ling 2008).

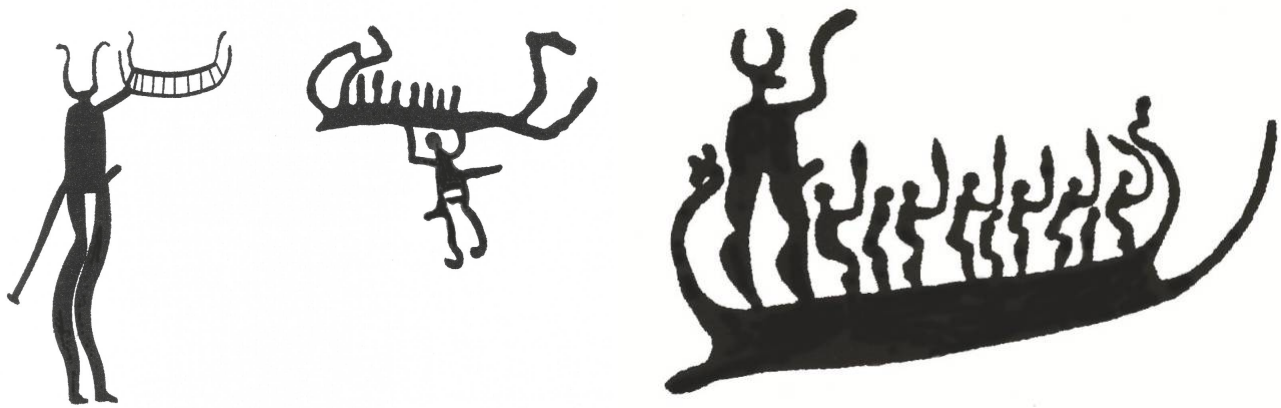


Fig. 6 Super-hero lifting a ship (A) at two different rock carving panels in Bohuslän (after Kaul 2004a). Another scene (B) at Tanum 325 similarly shows the leading warrior hero of the ship with oversized body, accentuated calves and horned helmet setting him apart from the crew (after Ling 2008).



Fig. 7 Bronze figurine of Sardinian warrior wearing a horned and crested helmet of considerable likeness to the Viksø helmets. Note also the round-shield, the greaves, corselet, sword and bow (?) (after Harding 2007).

with large round-shields and offensive weapons. Molloy (2009) has convincingly shown that, despite their thinness, Herzprung type bronze round-shields and variations thereof were perfectly functional in battle. The same would be valid for our two helmets. Symbol-rich weaponry may well have been thought to remove fear of death, thereby boosting bravery in combat: By putting on the Viksø helmets in battles or war raids, the wearer would become an invincible animal-human hero ancestor.

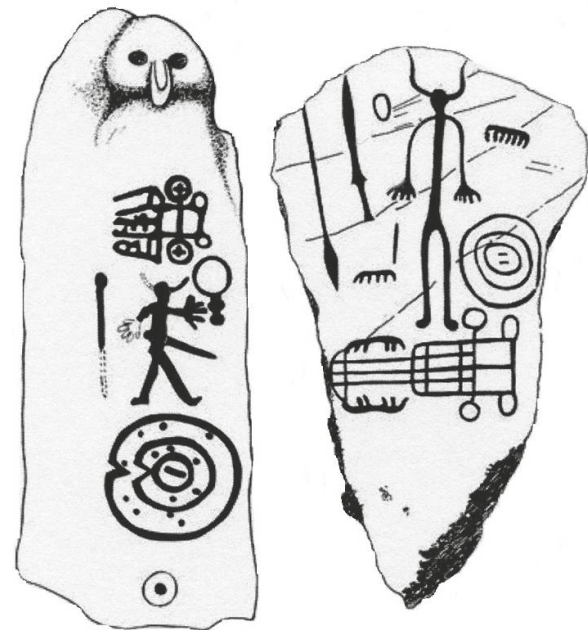


Fig. 8 Images from two Iberian grave stelae showing warriors with horned helmets. In addition, these and other pictures represent a panoply of weapons, notably large round shields and horse-pulled carts (after Brandherm 2008).

Considerably increased close range and long distance mobility characterized Urnfield Europe (Thrane 1975; Kristiansen 1998; Vandkilde 2007). Horned helmets and variants of large bossed round-shields concentrate in the Iberian Peninsula and on Sardinia (Harrison 2004) (Figs. 7-8). Brandherm (2008) argues for an early development of horned helmets in Iberia from around 1100-1000 BC, independent of Near Eastern bull-headed figures. The early horned helmets on Sardinian figurines are thought to date to the period around 1200 BC (Brandherm 2008). This is the time when chaotic upheavals in the Aegean and the Levant lead to the collapse of palace-organized state hierarchies (cf. Dickinson 2006; Suchowska-Ducke in press), *inter alia* connected with the legend of the Trojan war. Notably related to these events was a group



Fig. 9 Horned helmets, round-shields and bird-shaped ship sterns connected to the Sea People warriors named Shardana (probably Sardinians) c. 1200 BC. (A) Sea battle scene depicted at the temple of Ramesses III at Medinet Habu (Battle of Delta 1178 BC) - A close-up of warriors is shown. Note the bird-shaped sterns in the right margin of the photo (Lessing Photos). (B) Sherd from wine crater from the final habitation at the citadel of Tiryns (after Wachsmann 1998).

of the Sea People who fought naked wearing horned helmets and round-shields in the Battle of the Delta 1178 BC, depicted in propagandist style on the temple of Ramesses III at Medinet Habu (Fig. 9)(cf. Oren 2000).

The warships in the Mediterranean final Bronze Age sometimes had bird-headed devices on stern and rear (Fig. 9) and Homer mentions trunked or beaked ships (Wachsmann 1998), analogous to the Viksø helmets and other Urnfield items with *Vogelssonnenbarke*. Some of the ship-borne 'Sea People' warriors probably came from the western Mediterranean, and may even have included maritime warriors from the Atlantic zone and northern Europe. This idea of Urnfield-Mediterranean connections from c. 1200 BC onwards is not new (e.g. Kimmig 1964; Wachsmann 1981, 1998; Kristiansen 1998: 96, 170ff), but it now gains new relevance by revisiting an old find. A thread leads from war and social upheaval in the east Mediterranean over Sardinia and Iberia to Viksø with offshoots to adventurous sea travels, warfare, material culture emulation, transfer of cosmological elements, myth-making and the transport of bronze along the Atlantic coasts.

Nordic horned helmets, and likely the round-shields, can be seen in the context of sea journeys, combining trade with raids and battles. The stelae and rock imagery of Iberia furthermore share some elements with the Scandinavian images, suggesting a link between the two regions (Fredell 2010). Iberia and Sardinia are copper-rich regions, which, according to recent science-supported results, were important resources for the bronze-working traditions of the later Nordic Bronze Age and even insular western Europe (Ling et al. 2013). The ingot-carrying shipwrecks recovered off the coasts of Britain⁴ are thus coupled with trade in metals in the European Atlantic zone after c. 1200 BC. Frequent south-west-bound sea voyages must have been undertaken to secure regular supplies of copper and probably tin. The extremely high proportion of tin in the two Viksø bronzes favours regular supplies rather than the use of recycled metal.

Atlantic-Mediterranean sea travels arguably fuelled the epic myths encountered in glimpses on Nordic Late Bronze Age bronzework and rock. It is likely that some of the myths in circulation had older roots associated with earlier phases of sea travel between 2000 and 1300 BC, but the onset of the Late Bronze Age brought a changed way of life. Changed religious beliefs materialized most clearly in the cremation rites. Forming part of these beliefs were ideas of boundary-transgressing mortal heroes, derivatives of the Aegean Dioskouroi, Heracles, Jason and others. The story emerging from Leda and the swan concerns semi-divinity in combination with mortality, and seems to have moved westward and northward in a process of creative translation that included the ship. This and other tales likely moved along the Mediterranean-Atlantic track and over time became inseparable from Nordic heroic myths. Returnees may well have claimed a heroic identity based on the cultural and economic capital appropriated in distant lands (cf. Vandkilde 2008).

All this may have renewed centuries-old travelling cultures⁵ as well as instituted refinements of the cosmology. Over the course of their evolution, these developments became more targeted

towards ensuring a safe transfer of the dead to an afterlife in the netherworld. The Earlier Bronze Age had in the Late Bronze Age become the era of great deeds and great men (Kristiansen 2010). In the Late Bronze Age, tales of famed ancestors may have been coupled with individuals buried in old mounds, as Kristian contends. The cults which I have argued were established in the Late Bronze Age seem to have been genuine hero cults built on constructed genealogies rather than true kinship: a place or a monument claimed to be associated with the death of the hero (Whitley 1995; Ekroth 2009). The epic nature of the adventurous, travelling and fighting heroic figures in rock-cut and bronze-cast images supports this conclusion.

Life was a hair's breadth away from death, on the battle field and when voyaging. Fame and death were partners. The hypothesis of a hero cult goes well with the striking Bronze Age preoccupation with death and warfare (Goldhahn 2009; Green 2011). The delight in, and reverence of, magnificent weapons (Goldhahn 2009; Green 2011) dispatched on their final water-enfolded journey to reach their rightful owners in the chthonic netherworld illustrates the intertwinement of death, war and travels. We may even wonder if these offerings were sometimes made from aboard a ship in celebration of a long-dead ancestor hero and maybe coincided with the assumed death of a would-be hero, unreturned from a sea voyage. The making of heroes is, after all, an ongoing business.

Closing words

In this essay, I have speculated more than usual in honour of a living hero of mine, Kristian Kristiansen. I dedicate this tale of the twin helmets from Viksø to you Kristian in thankful acknowledgement of the inspiration you have given me over the years.

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⁴ September 2011. Please consult: <http://www.telegraph.co.uk/earth/environment/archaeology/7228108/Bronze-Age-shipwreck-found-off-Devon-coast.html>, <http://www.machuproject.eu/news/news-55.htm>, <http://174.122.234.116/showthread.php?t=169486>

⁵ September 2011. Please consult: "Forging Identities: The Mobility of Culture in Bronze Age Europe" <http://www.forging-identities.com>

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BRONZE AGE HOARDS AND THEIR ROLE IN SOCIAL STRUCTURE: A CASE STUDY FROM SOUTH-WEST ZEALAND

Svend Hansen

Abstract: During the Bronze Age metal deposition played an enormous role in many regions in Europe. In Western Europe in particular metal artefacts are known almost exclusively from hoards or as single depositions in rivers and bogs. In most European countries hoards were regarded as hidden treasures, lost during wars and other crises. Only in Denmark does the interpretation of hoards as votive offerings – particularly those from bogs – have a long tradition, dating back to the nineteenth century. In many other countries the interpretation of hoards has changed significantly during the past 20 years: from founders' and/or traders' hoards to 'gifts to the gods'. This formula, however, does not fully describe the many social dimensions of the act of hoarding. The general social mechanisms of the gift were described by Mauss (1954). Most fruitful is the use of their analytical potential in a diachronic and supraregional perspective.

Keywords: Denmark, Bronze Age, social structure, founders hoards, traders hoards, votive offerings, gifts

Introduction

The huge numbers of Bronze Age hoards from Western Europe have fascinated scholars since the nineteenth century. Initially, interest centred mainly on the objects themselves, while the locations of such discoveries received decidedly less attention. In many cases this can be attributed to practical reasons: the objects were found accidentally in construction work and passed on to museums by middlemen; very few hoards were actually discovered by archaeologists. Comprehensive investigations such as at Mittelberg/Sachsen-Anhalt, the find-spot of the hoard of Nebra, famous for its celestial disk, are rare exceptions indeed (Meller 2002: 18). It is now necessary to consider a broader sample of less spectacular hoards in order to investigate and reconstruct find contexts. That is, if more detailed studies of the find-spots of the dedications, of these 'sacred' or 'special' places, were undertaken, it might shed new light on an entirely marginal group of contexts.

Since the nineteenth century there have been lively debates about the motives and causes that could have led to the concealment of these objects. Until well into the 1970s individual features, in particular the fragmentary state and undamaged condition of bronzes, were chosen as an approach towards the interpretation of this group of finds (Stein 1976; Primas 1977; Levy 1982). So it seemed that a plausible distinction could be made between depositions of fragmentary ore (*Brucherzdepots*) containing broken objects and depositions of finished wares (*Fertigwarendepots*) or traders' goods (*Händlerdepots*) containing objects in whole, undamaged condition.

A qualitative change came about after the mid 1980s with the appearance of a number of studies in which the approach employed structural methods (Willroth 1985; Hansen 1991; Hansen 1994; Sommerfeld 1994; Maraszek 1998; 2006). The individual elements of a hoard were examined with reference to their relationship to all other elements within the hoard, or the entire system. From this conclusions were drawn concerning the meaning and function of the individual elements as well as that of the entire system. This approach opened up the field for new perspectives on the phenomenon of hoards or the deposition of metals, which for the first time enabled a historical description of the supra-regional distribution of deposition phenomena in considerably greater temporal depth. Encompassed here are

studies on the arrangement of objects in hoards (Hansen 1994: 325 f.; Soroceanu 2005), details about the fragmentation of the objects (Hansen 1998; Maraszek 2006: 248ff), the emergence and dissemination of types of hoards (Maraszek 2000; Blajer 2001; Hansen 2005; Hänsel 2007; Mörtz 2010), and last but not least the sites of depositions (Soroceanu 1995; Hansen 2008; Ballmer 2010; Neumann 2010). Furthermore, the changes and consistencies observed in depositions in various regions are described as a form of development (Vachta 2008; Bratu 2009).

The fragmentation of objects in many hoards (Sommerfeld 1994: 21ff) is perhaps the nerve point within the history of the interpretation of hoard finds, for which reason this aspect should be discussed briefly here. Only recently systematic research has shown that as a rule fragmentation did not come simply from using the object, but instead that it was done intentionally. Techniques applied in breaking and dividing bronze objects have been reconstructed and differentiated in painstaking detail. The division of objects was made according to standard weight, which has been attributed to a premonetary system (Sommerfeld 1994: 31ff). In addition, signs of the wild and destructive aspect of fragmentation have been noted (Nebelsick 2000). Nonetheless, there are still some practices, such as the insertion of small fragments of bronze in the hollow space of socketed-axes and lanceheads, for which there is no explanation as yet. There is, however, evidence that fragmentation should be perceived as having taken place within a complex (ritual) activity (Hansen 1998; Soroceanu & Szabó 2001).

The fragmentation of objects in hoards thus proves to be a cultural feature that is an integral component of the meaning and purpose of deposition. To a limited extent, broken objects, rings in particular, were part of the image of hoards as early as the Early Bronze Age (v. Brunn 1959; Menke 1979; Moucha 2005; Brandherm 2004). Yet, the intensive hacking into pieces of bronze objects did not occur from the very beginning, but appeared later in an advanced stage of hoards, namely at the transition from the Early to Middle Bronze Age. So, if there had really been an authentic 'reason' for so-called *Brucherzdepots*, as Primas (2008) proposes, then this would be expected from the very beginning of hoard depositions. For example, didn't the Early Bronze Age founder have good reason to break objects in order to re-melt them? And did Early Bronze Age objects break less often than those of Late Bronze Age date?

In actuality, what we have here is an innovative model of hoard depositions that was presumably established in Transdanubia. By contrast, east of the Tisza River a hoard model was preferred in which objects were deposited in an intact state (Hansen 2005). Through this new innovative model with intentionally fragmented objects the spectrum of the items deposited was broadened considerably. The main components were now sickles, axes and bracelets, to which pins, daggers or lanceheads could be added in a specific sequence as well as metal ingots and symbolic figures (small pendants). These objects were broken into fragments, made useless intentionally, and for the first time there is a correlation with the insertion of small fragments in socketed objects. This hoard model spread rapidly into other regions, leaving its mark on numerous hoard landscapes across Europe in the fourteenth/thirteenth century BC to the ninth century BC. This type of hoard found only limited reception where deposition activities in Denmark are concerned. There the orientation was towards hoarding traditions known in the northern Carpathian Basin. This aspect will be discussed below.

The fragmentation of objects in hoards is a sensitive cultural feature, which in its complexity has still not been grasped sufficiently, not least because the respective documentation in publications is often insufficient. It is difficult to judge the methods of breakage as well as other possible traces of deformation. Conversely, the determination of the weight of the objects in a hoard is now one of the scientific standards in publications on hoards (for example, Salaš 1997; Ciugudean, Luca & Georgescu 2006; Bejinariu 2007). The weight of the individual fragments can likewise be used in the description of the hoards. Accordingly, it can be stated that during the thirteenth/twelfth centuries BC objects were fragmented into distinctly smaller pieces in Bohemia than they were in Transdanubia (Hansen 1994: 360ff). Similarly, the weight of individual hoards in different deposition landscapes differs correspondingly. Nevertheless, the question as to possible standard sizes among hoards cannot be answered yet. However, in view of the above, one would hardly assume that the ‘capacity of the person carrying the hoard’ played a role in the typical size of a deposition (Primas 2008: 162f); instead, concepts relating to the appropriateness of the gifts were in all likelihood far more responsible.

The fragmentation of objects belonged to the state of knowledge represented in hoards, which could be handed down through tradition within the regional hoard landscapes over longer periods of time and circulated over long distances, as demonstrated by the relationships between fragments. The regularity in the breakage of objects must therefore have been associated with the mode of giving. One important observation of hoards with fragmented objects is that matching pieces are rarely attested, and only in very exceptional cases are all of the fragments of an intentionally broken object found in one hoard. Hence, it is not surprising that merely three fragments were found to match in the hoard containing 838 bronzes, discovered in Polešovice, Moravia (Salaš 1997: 55f). Usually only one fragment of a single object is represented; that is, it was customary to include one part of an object in a hoard. There is no evidence of the fate of the other, usually numerous, components of the fragmented object.

In the practice of giving gifts to imaginary powers, the destruction and burial of the gifts has been seen as a protective measure against new profanation, as a confirmation of the rule of *ὅρκ ἐκφορά* (ouk ekphora) in sanctuaries in Archaic Greece, after which it was not permitted to remove anything from the precinct. Nevertheless, a recent study has shown the regularity in the reuse

of bronze votive offerings in sanctuaries, that is, the reworking of sheet metal or the remelting of cast objects. Accordingly, larger parts of bronze tripods, the most prestigious of votive gifts in the Geometric Period, were melted down; other single pieces, on the contrary, were saved from being reused and preserved in wells or in other heaps of votive-debris within the *temenos*. The whereabouts of some fragments in possession of the deity was possibly understood as *pars pro toto* (Kyrieleis 2006: 97). It cannot be excluded that similar concepts may also have applied to Bronze Age hoards containing fragments.

Just as a scrutinous observation of fragmentation has led to entirely new insights, so the seemingly undamaged objects in ‘depositions of finished wares’ should be subjected to more detailed examination. The recent reinvestigation and detailed autopsy of a find from Voorhout (Netherlands) revealed that the alleged ‘trader’s hoard’ consisted in fact of used and damaged axes, which would hardly qualify as goods appropriate for trade (Fontijn 2008). Here as well the veto power of sources is supported: ‘In a strict sense a source can never tell us, what we should say. It nevertheless hinders us in making statements, which we should not make. Sources have a veto right. They forbid us to dare to interpret or to allow an inference, which basing on a source context is plainly false or obviously unacceptable’ (Koselleck 1989: 206).

Hoard, therefore, are an identifying structural feature of the Bronze Age in large parts of Europe, from the Black Sea to the Atlantic Ocean and from the Mediterranean to the Baltic Sea, because they stand in a ‘cultic-religious context’ (Reim 2009: 165), or are part of a complex social practice, respectively. The deposition of objects is an historical phenomenon, for which the temporal depth can be described.

It will become possible to write a ‘history of depositions’, and this long-term perspective will contribute in a new way towards deciphering the ‘social meaning of depositions’.

The long-term phenomenon ‘hoard’

Hoard are an especially prominent phenomenon of the Bronze Age in the second and early first millennium BC, but they are not a Bronze Age invention. The depositions of objects, in particular axes, had already begun in the Neolithic Period. Jade axes of the fifth and fourth millennia BC are found singly or deposited in hoards throughout all of Western Europe and in western Central Europe (Pétrequin et al. 2002). Flint axes in Nordic and northern Europe (Rech 1979) are yet another example. At the same time a deposition landscape emerged in the eastern Carpathian Basin, in which copper axes and flat axes were deposited singly or in large numbers for imaginary powers, whereas individuals were interred with metal goods of only minor value. The fact that this custom did not change, neither during the Bronze Age nor in the Iron Age, brings to the fore all the more the extremely long time span to be considered when dealing with the phenomenon of depositions.

There are, of course, deposition landscapes of a smaller scale. The ground-breaking research on old paths to the salt mines at Hallstatt (Windholz-Konrad 2008) has revealed a kilometre-long ritual landscape that is punctuated by depositions. These individual outstanding formations in the landscape may have fulfilled a function as sanctuaries, too. No such site is known in Central Europe at which a like function can be attested with certainty; by contrast, research there is dependent upon speculation (Hänsel 1997: 16f).

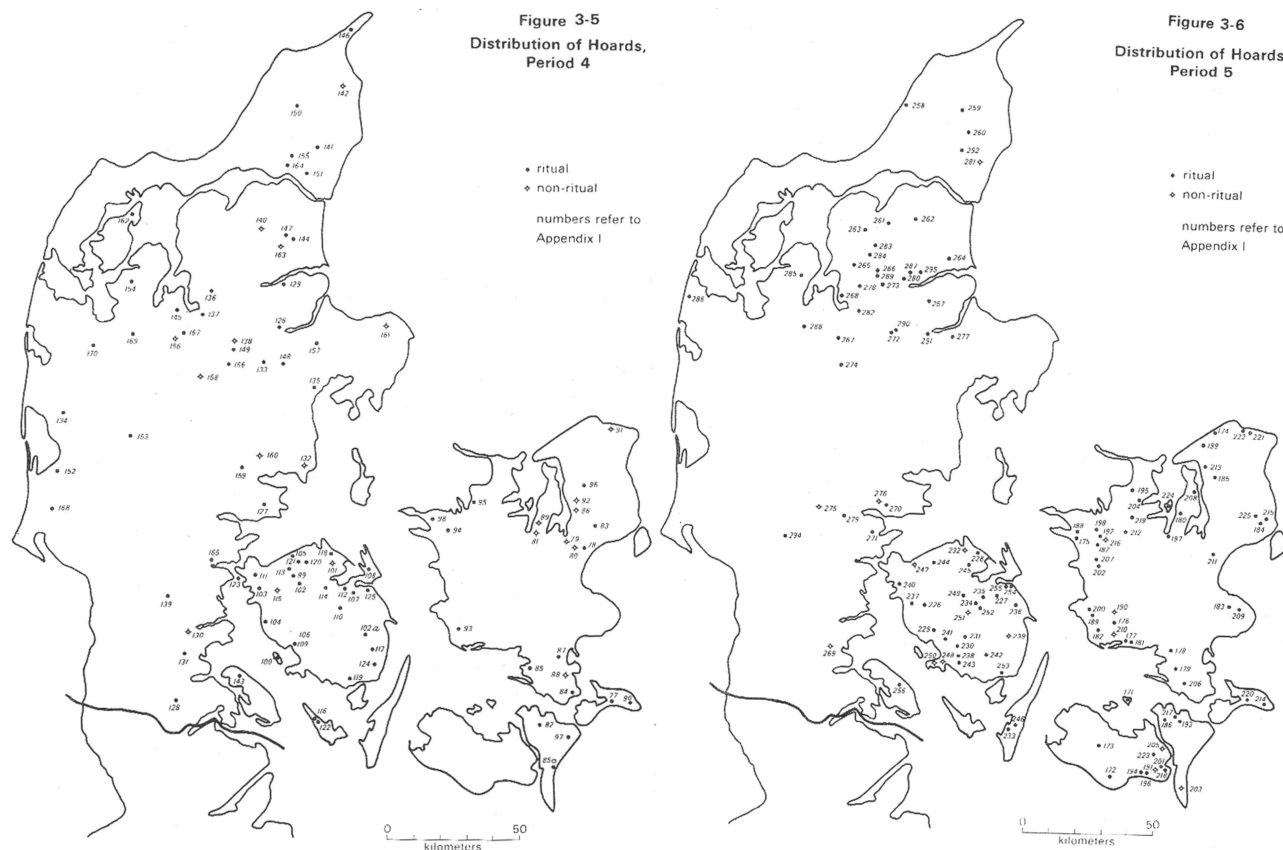


Fig. 1 Distribution of hoards during Periods IV and V (after Levy 1982).

Note has often been made that concentrations can be recognized in the distribution of hoards, which are separated by a broad corridor of 20 to 50 km that is devoid of any depositions (Sommerfeld 1994: 63ff figs. 16-21). The structure of these hoard concentrations is still largely uninvestigated. It is nevertheless certain that the structure of the hoards is marked by a certain homogeneity which is different from that in neighbouring regions. Hence, we have a deposition landscape in view that is on a larger scale than hitherto assumed.

Similarly, in Denmark distribution maps (Levy 1982) have revealed regional concentrations of hoards during Periods IV and V on Zealand (Fig. 1). Hoard concentrations in southwestern Zealand were designated as 'centres of wealth' by Jensen (1981) in a publication on three golden bracelets from Boeslunde. The three golden rings came to light in the immediate vicinity of the 54 m high Borgbjerg in Boeslund near Skælskør, a mountain that until then was interpreted as a sanctuary (also Borrebjerg, Borgbjerg; cf. Kjær 1928: 8f fn. 1). Thrane (1969: 78) is of the opinion that the Borgbjerg is the single place in Denmark that can be addressed as a sanctuary with certainty. Jensen, in contrast, considers as less probable theories that this was a 'sacred' place. On the other hand, 'centres of wealth' could also have had to do with management or control over 'sacred resources', as attested in medieval Gudme. Kristiansen (1996: 261, fig. 4) may have had this kind of association in mind when he linked 'ceremonial hoards' with 'regional ceremonial central places'. The Borgbjerg was possibly the central significant point of an unusually rich landscape of depositions. There a large area spanning several square kilometres is covered with sites of hoards, like a network.

It is indeed worthwhile to take a closer look at hoards in the immediate as well as distant vicinity of Borgbjerg and to order them temporally in the supra-regional happenings. Among the oldest depositions in the area of Borgbjerg is the copper flat axe (Fig. 2) found at Stignæs on the coast and dated to the fourth millennium BC (Aner & Kersten 1976: No. 1192). Comparable flat axes are present in northern Germany and Denmark, most of which are single depositions (Laux 2000: 1ff Nos. 1-26; Klassen 2000: 339ff). But there are also some spectacular hoards deposited around 3500–3400 BC. Through the flat axe, the hoard of Szczecin-Śmierdnica (Fig. 3), found under a block of red granite, can also be assigned to this time horizon (Kunkel 1937). These early hoards containing metal of considerable value (Fig. 4) were offerings to imaginary powers, and only those individuals who at that time were moving 'big wheels' and had 'international' contacts could have come into the possession of such substantial amounts of copper. The hoards also indicate that only by offering such valuable gifts could these individuals enter such obligatory social relationships with the powers.

Also discovered in the surroundings of the Borgbjerg are two more hoards that contained amber: one hoard was from a bog near Vollerup and the other, deposited upon a clayey underground near Skælskør (Ebbesen 1995: 58 Nos. 6-7). They, too, date to the fourth millennium BC. Also, two thin-necked flint axes are from Førslev (Rech 1979: 109 No. 186); two long polished flint axes were found in Krummerup (Rech 1979: 109 No. 188); and three thin-necked flint axes came from a bog near Borreby, south of Skælskør. Two more flint axes came from the Lindes Aa near Flakkebjerg (Rech 1979). Seven white flint axes (Fig. 5) were

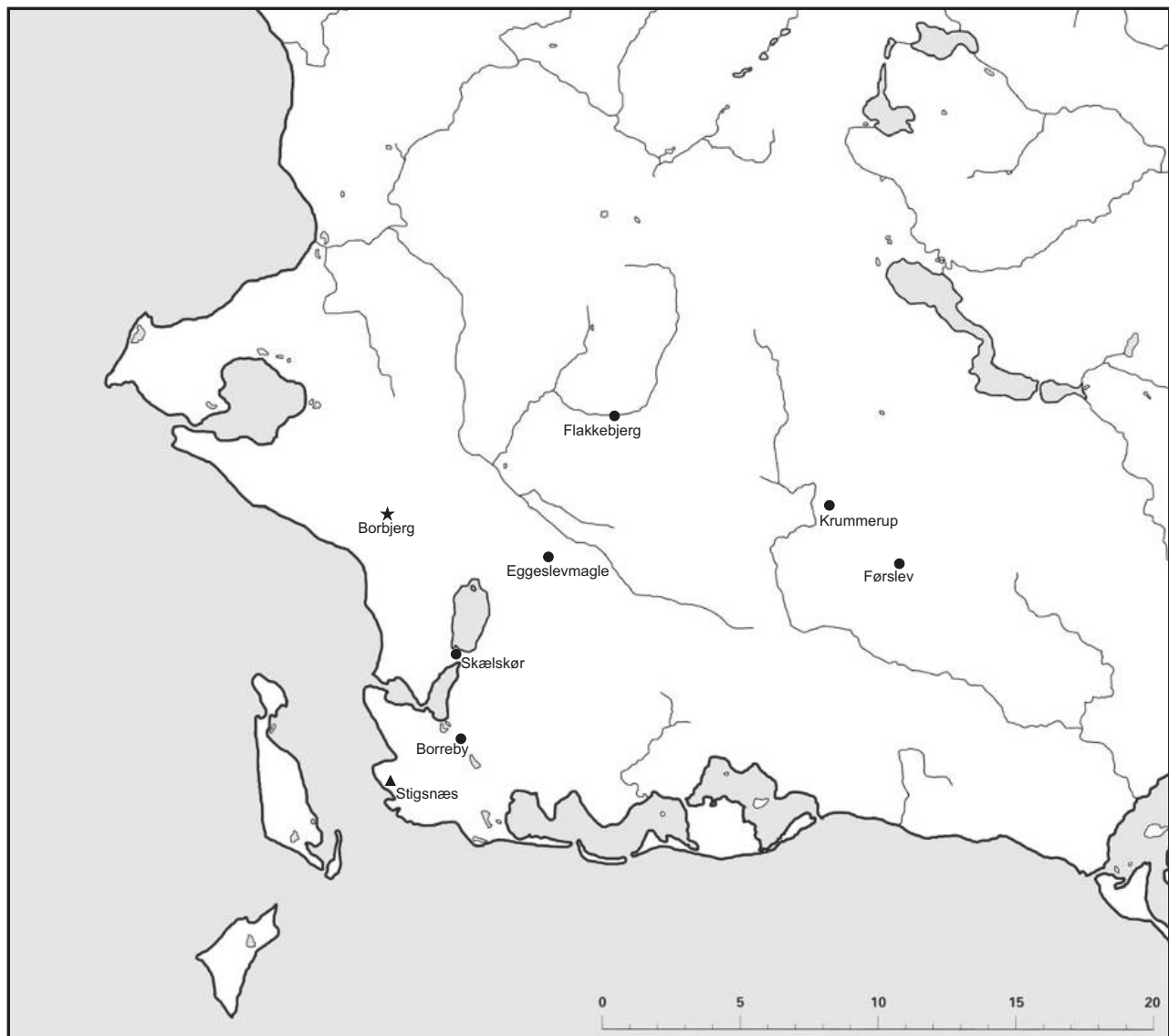


Fig. 2 Distribution of depositions during the Funnel Beaker Period in south-west Zealand.

found at the edge of a small bog near Eggeslevmagleby (Brøndsted 1957: 273) which could belong to the third millennium BC.

Hoards in many regions in Europe are either rare or unknown from the third millennium BC. Notwithstanding, the grand time of hoards began in Europe in the Bronze Age *after* 2000 BC. Whether ‘traditions’ in deposition practices over longer periods of time, from the fourth to the second millennium, can be attested, or whether these practices were independent of one another and actualized again and again, is a question that cannot be answered conclusively here. The diachronic observation of depositions is preliminary work that is requisite for an answer. In any case, today ‘structural lines of continuity’ receive more attention (Metzner-Nebelsick 2009: 22).

Among the oldest Bronze Age depositions (Fig. 6) is an Early Bronze Age axe from Neble (Aner & Kersten 1976: 142 No. 1126.). Considered together with the hoard from Fårdrup, the surroundings of the Borbjerg appear especially rich in depositions, with two massive axes and a hitherto singular, decorated macehead (Aner & Kersten 1976: No. 1178). A gold

band that was found in a bog near Gryderup can be assigned to Period II (Aner & Kersten 1976: 141 No. 1123). Likewise dated to Period II is the extraordinary hoard from Svenstrup, north of Korsør, which may also be drawn as reference. A lunula, several spiral armrings and three large as well as 30 small belt plaques and tutuli were retrieved from a bog (Aner & Kersten 1976: 148f No. 1160). No less exquisite are two belt plaques, two lunulae and more spiral jewellery from a bog near Frankerup (Aner & Kersten 1976: 156 No. 1173). In addition, two more depositions were found in Fårdrup: one contained two lunulae and one or two spiral armrings (Aner & Kersten 1976: 157 No. 1179): The second hoard held an assemblage of three lanceheads, the fragment of a sword, and two chisels which were found during the clearing of a stream bed (Aner & Kersten 1976: 157 No. 1180). A bog near Hesselby yielded a solid hilted sword, and from the same bog or a different one – a lancehead (Aner & Kersten 1976: 156 Nos. 1175-1176).

Depositions during Period III seem to be absent in this area, if one does not assign the multitude of palstaves from the region to this time. Only with Period IV, later than in many other regions

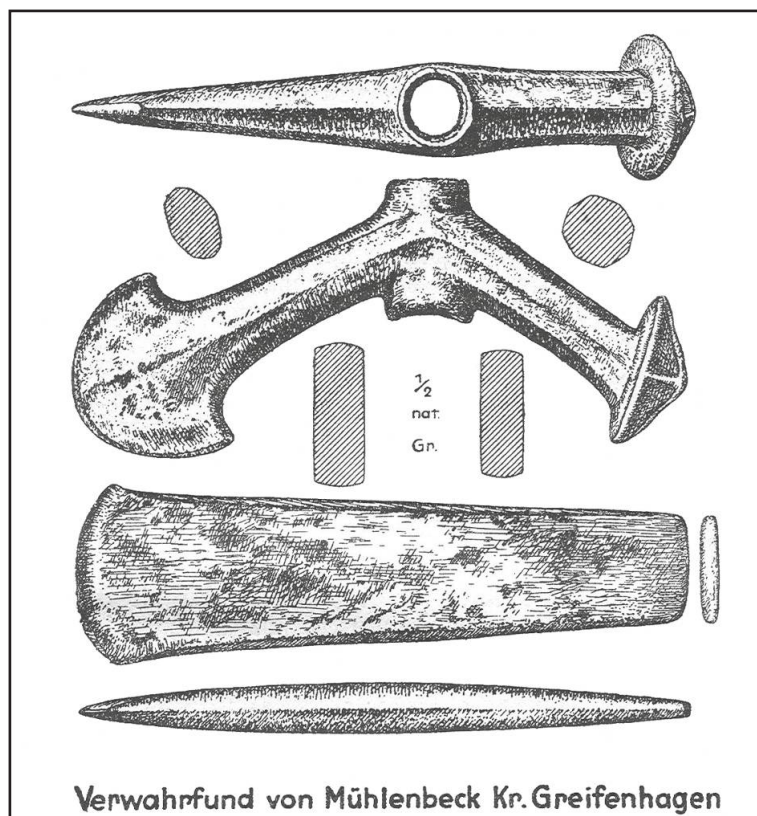


Fig. 3 Hoard from Szczecin-Śmierdnica (after Kunkel 1937).



Fig. 4 Distribution of hoards of the Funnel Beaker Period.

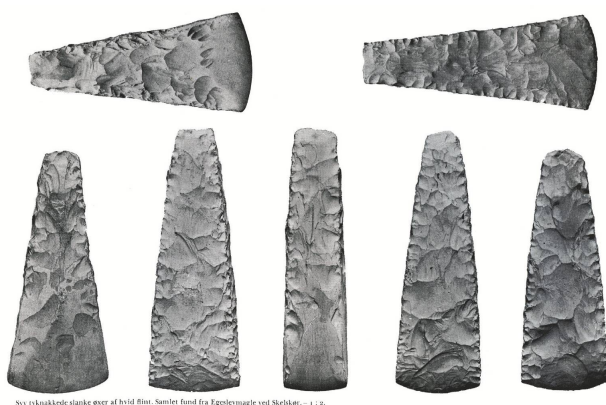


Fig. 5 Hoard from Eggesmagleby (after Brøndsted 1957).

in Europe, can a quantitative expansion of deposition activities be observed. The majority of hoards in the surroundings of the Borgbjerg stem from this time. Without a doubt, the golden vessels discovered at Borgbjerg represent 'ceremonial hoards'. The two bowls were found in 1842, the two ladles with a grip in the shape of a horsehead and two beakers in 1874. The gold vessels are dated to Period V. Admittedly, some finds from the Middle Bronze Age, such as the bowl from Rongères or the gold hat from Schifferstadt, show that the decoration code of the gold work is very traditional, so that stylistic correspondences between gold- and bronze vessels are possible only in a few cases. Nonetheless, a dating in Period IV or Period III cannot be excluded.

Among the offerings found in the immediate vicinity of the Borgbjerg, special mention should be made first of two bronze lures (Broholm 1946: 168ff). Only a few hundred metres away three heavy gold rings came to light in a bog hole near Neble, among them the hitherto heaviest known 'oathring' (770 g) (Jensen 1982: 174f, fig. 6). Two more gold rings were discovered at the same site in 1993 (www.guderoggrave.dk). A gold ring is also known from Magleby, south of Borgbjerg (Broholm 1946: 279 No. 24.).

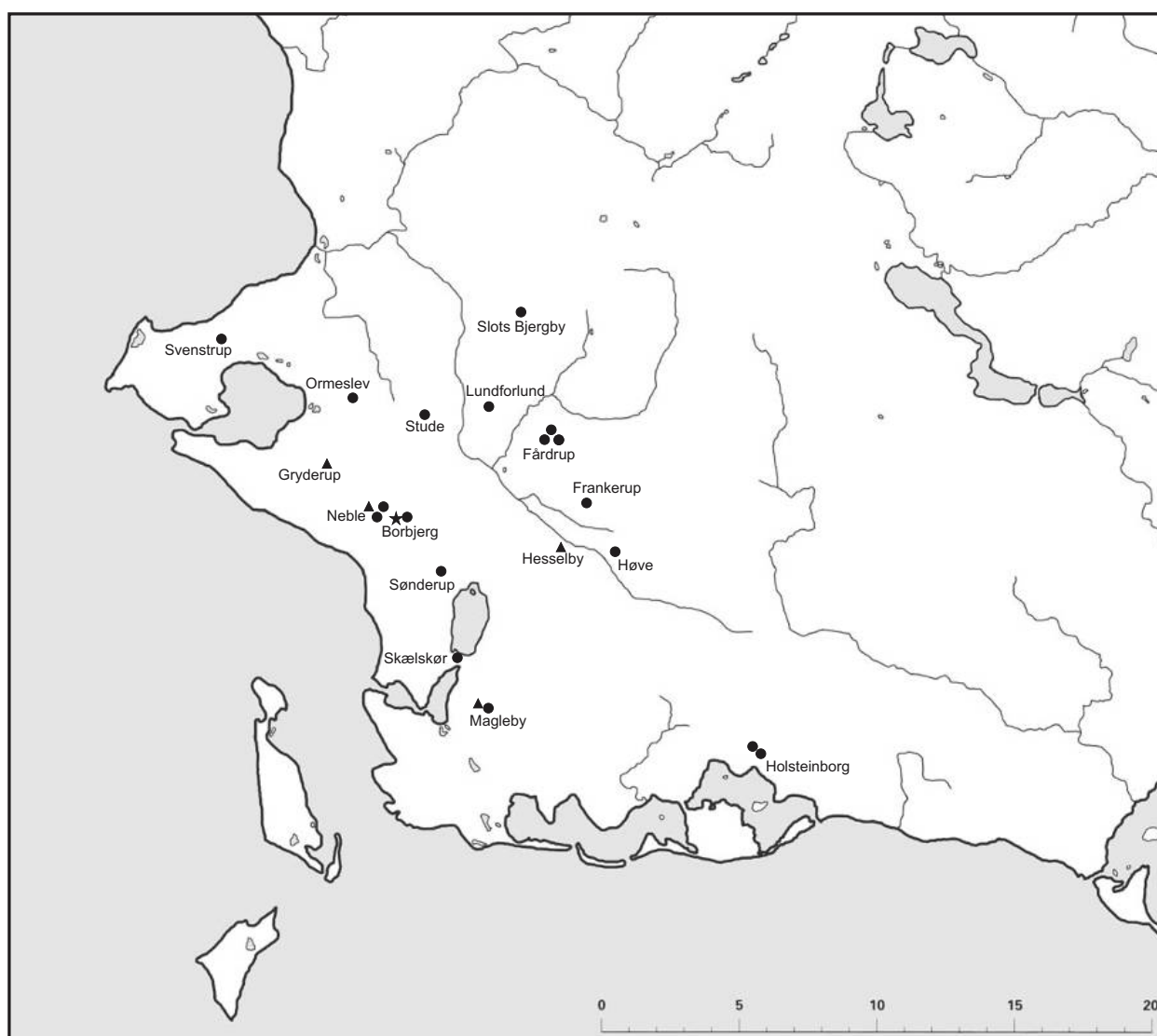


Fig. 6 Distribution of Bronze Age depositions in the vicinity of the Borgbjerg (Periods I-V). Circle: hoard; triangle: single deposition.

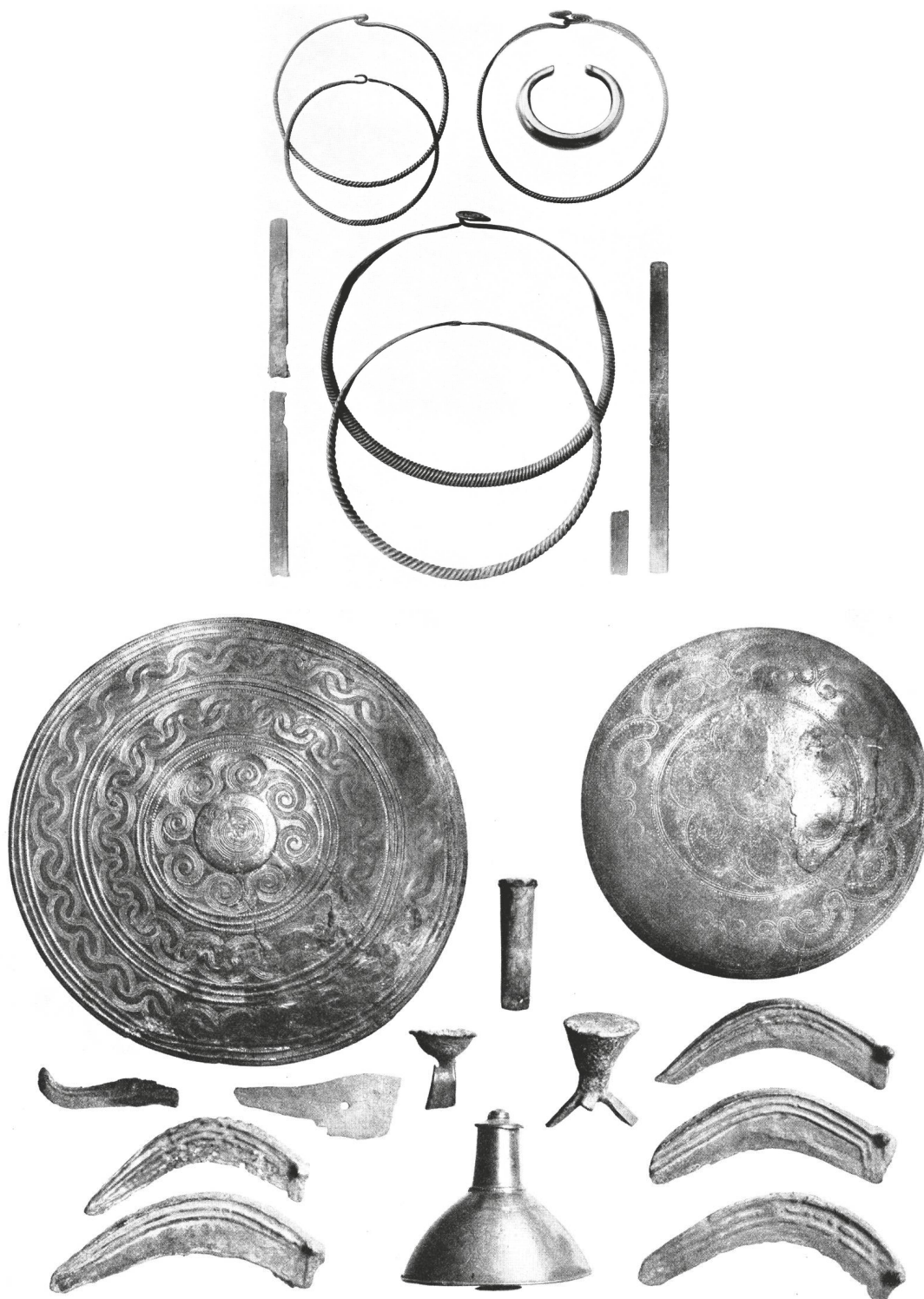


Fig. 7 Hoard from Lundforlund (after Broholm 1946).

Dated to Period IV is the hoard, likewise found in Boeslunde, Neble, which contained a belt disk, two fragments of a neckring, one plate brooch, the fragment of a knife and a sphere (Broholm 1946: 179f No. M 14). Jensen purported the identification of a nearby centre of wealth in Slots Bjergby, 9 km north of Borgbjerg, near Slagelse, where likewise three golden oathings were found on the hill 'Bredehøj' (Jensen 1981: 80). He assigned the hoard from

a bog near Lundforlund (Fig. 7) to this centre. The hoard consisted of two hanging bowls, a belt buckle, five neckrings and one armring, in addition to five sickles and a chisel. Aside from these were also fragmented objects, namely pieces of a bronze band, a sickle and a knife as well as two wasters (Broholm 1946: 215ff). Probably based on the presence of the wasters, Levy classified the hoard as not of ritual nature (1982: 139 No. 190), a viewpoint that



Fig. 8 Offerings of wasters in hoards of Period IV (triangles) and Period V (squares) (after Jantzen 2008, amended).

is difficult to follow today. It remains open to question whether Lundforlund, as Jensen maintains, can be counted as a 'centre of wealth' like Slots Bjergby near Slagelse. Indeed, it is hardly possible to make a clear distinction between Slots Bjergby and the hoard from Stude (the neighbouring community to the west), for example, which Jensen counts with the Borgbjerg. This hoard contained a hanging bowl, a plate brooch, two armrings, three neckrings, a bronze tube and a chain (Broholm 1946: 215 No. M 130). In Ormitslev a bronze chain came to light from beneath a large stone (Broholm 1946: 215 No. M 132). From a bog near Høve stems a hanging bowl, a belt buckle, a twisted bronze band, two phalerae and two horse bits with sheet metal jangles (Broholm 1946: 213f No. M 127). A further hanging bowl belongs to a hoard found in a bog near Holsteinborg, which also contained a belt buckle, a bronze disc and rattle jewellery (Broholm 1946: 213 No. M 126). Ploughwork in the area near the former bog at Magleby brought forth a hoard in 1893, in which two hanging bowls and the fragment of a third basin were found. Further components of the hoard include two belt buckles, one neckring, one whole sickle and five fragments, the fragmented piece of a knife, six partly fragmented socketed axes, five chisels, one lancehead, six fragments of a sword blade, armrings and fragments of armrings as well as various other fragmented bronze pieces, among them three wasters (Broholm 1946: No. M 129).

Unfortunately, the Danish hoards with small-sized fragments and wasters do not allow any conclusions to be drawn on an empirical basis. Until now they have been regarded simply as collections of old metal, in view of the broken pieces. So at present it can

only be conjectured that – after closer examination – here we will have a culture-specific phenomenon, like we have recognized in other hoard landscapes in Europe (see above). The deposition of wasters in the hoard is, in general, an unusually rare appearance and limited to only a few regions. As wasters accumulate in large numbers during production, their rarity, especially in so-called old metal collections, should be surprising. According to Jantzen (2008: 216), some 10,000 pieces of castings, among which wasters would be expected, stand opposite only 84 recorded wasters in the Nordic sphere. This contrast would show how thoroughly the wasters that occurred during production were collected and at the next opportunity remelted. He interprets hoards containing wasters as collections of used metal, which for one reason or another could not be stored any longer.

All the same, wasters were present in 32 of about 300 hoards (Jantzen 2006: 217), which is a remarkably high portion in a supra-regional comparison. Among the c. 750 hoards of the older Urnfield Period, I could identify only 23 hoards with wasters (Hansen 1994: 134f, fig. 74). The portion must have been somewhat higher in large hoards, taking unrecognized pieces into account. The distribution pattern (Fig. 8) of wasters in Danish hoards seems to speak against their interpretation as additional pieces in collections of used metal. Namely, the conspicuous geographic division of wasters during Period IV in northeastern Denmark and Period V in western Zealand and on Funen can hardly be brought into agreement as presumed coincidences in metal collections. It is more likely that wasters should also be understood as symbolic offerings in hoards.

While the majority of hoards of the later Bronze Age are characterized by women's jewellery, three hoards containing weapons, found in the vicinity of the Borgbjerg, deserve special notice. One hoard was discovered at Brændte Mose near Sønderup, not far from Borgbjerg, and held an Auvernier sword, the blade of a sword and a 52 cm long lancehead (Fig. 9) (Thrane 1969). The Auvernier sword is the only example of its kind found so far in Denmark. It is almost outshone by the exceedingly long lancehead, which is a rarity in Europe (Hansen 1991). This may be because casting such long objects with a socket was an extreme challenge for the foundryman. Finding two such exquisite weapons together, an Auvernier sword and a 'super' lancehead, is qualitatively exceptional. Thrane 1969 already drew attention to comparable hoards in the region, namely to the hoard near Skelskør, in which a sword blade together with a lancehead measuring 51.5 cm in length (Fig. 10) were found together at the edge of a bog (Broholm 1946: 214 No. M 128; Jacob-Friesen 1967: 313, Pl. 135, 1-2). A third hoard containing the combination of sword and lancehead derived from a bog near Holsteinborg (Fig. 11), but the lance is 'only' 27.5 cm long (Broholm 1946: 213 No. 125; Jacob-Friesen 1967: 313, Pl. 139, 6-7). The joint deposition of swords and very long lanceheads represents a special type of hoard, which is widespread foremost in the Nordic sphere and the British Isles, yet – by contrast – appears only as an exception in Central Europe (Maraszek 2006: 176ff). The frequent deposition of exceedingly long lanceheads is a further mutual feature of these weapons hoards. They contain the prize products of Bronze Age metalworking, for which reason this concentration of several hoards in this small area should be particularly emphasized – especially when viewed against the background of the entire distribution (Fig. 12).

The diachronic observation of depositions in the close vicinity and wider surroundings of the Borgbjerg reveals several noteworthy peculiarities. Ever since the Early Bronze Age, perhaps even the

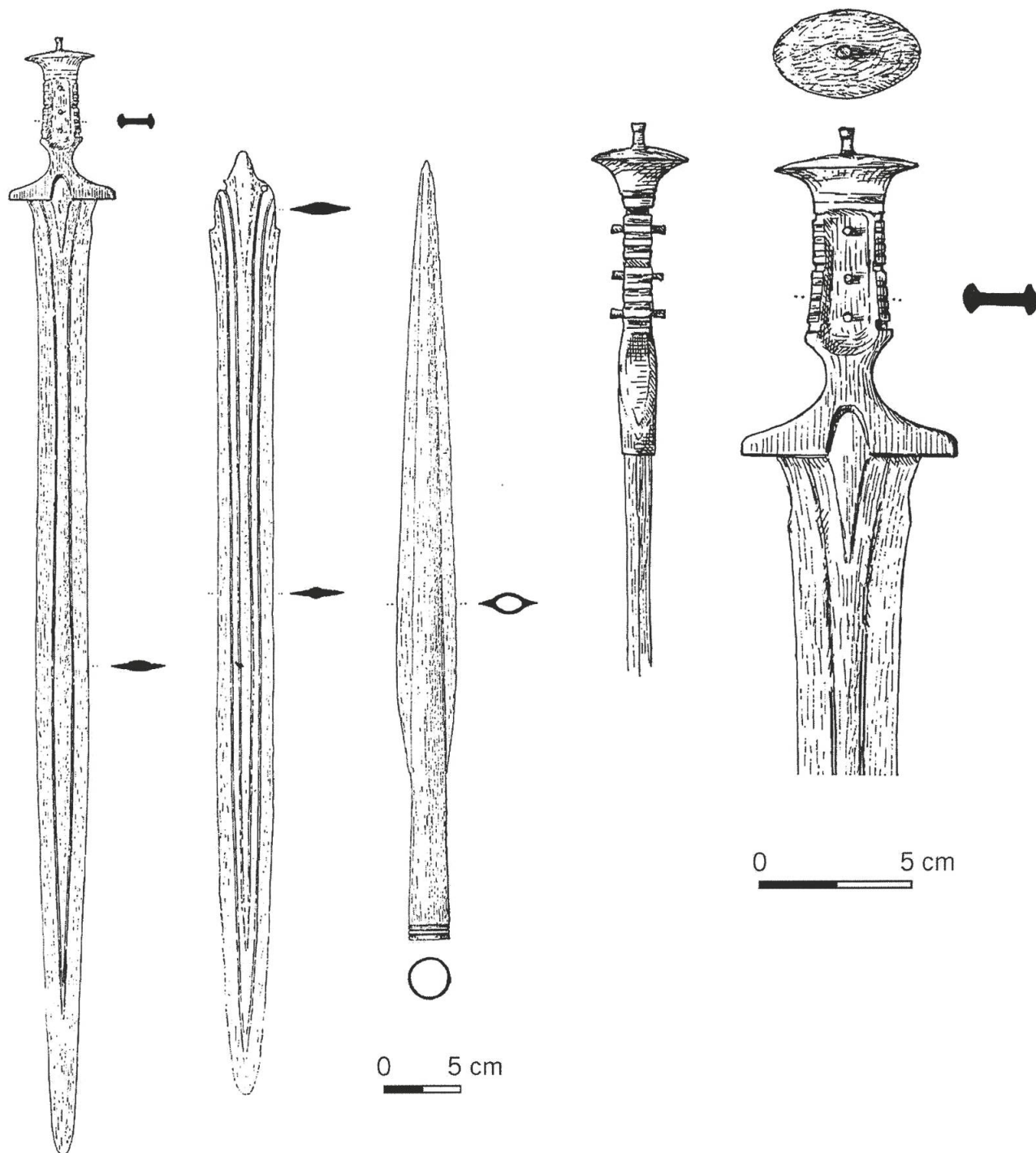


Fig. 9 Hoard from Brændte Mose (after Thrane 1969).

Neolithic, the landscape was marked by a large number of high-quality depositions. These deposits emerged in the Early Bronze Age and – compared to the entire dynamic of depositions, even compared with other regions – soon reached a quantitatively high level. In Period IV and V the increase in deposition activities corresponds with the general tendencies. Hoards in the smaller regions discussed here consist mostly of larger find assemblages with exquisite jewellery; a smaller number represent qualitative offerings of weaponry.

Unfortunately, it would exceed the limits of this contribution to observe in detail later depositions of the Iron Age and the early medieval period from this region as well. They, too, are remarkable in number and quality (Kaul 2002: 34ff). The discovery of small pieces of silver (*Hacksilber*) in Neble belongs to one of the latest depositions made before a church was built on the Borgbjerg (Bendixen et al. 1990).

Whether or not the remarkable density of hoards is actually related to the Borgbjerg as the centre cannot be proven in a strict

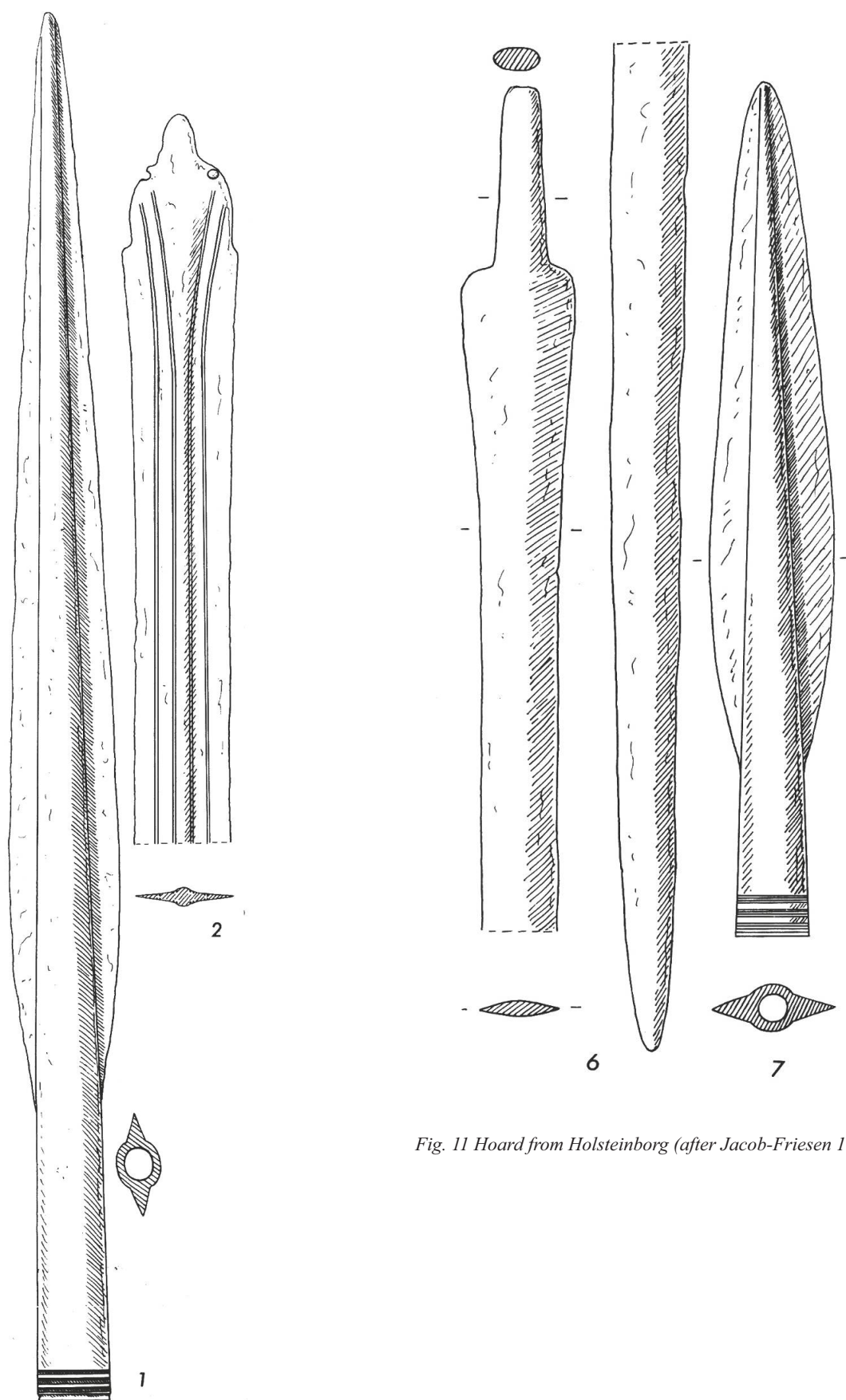


Fig. 11 Hoard from Holsteinborg (after Jacob-Friesen 1967).

Fig. 10 Hoard from Skælskør (after Jacob-Friesen 1967).



Fig. 12 Map of hoards containing the combination of lancehead and sword.

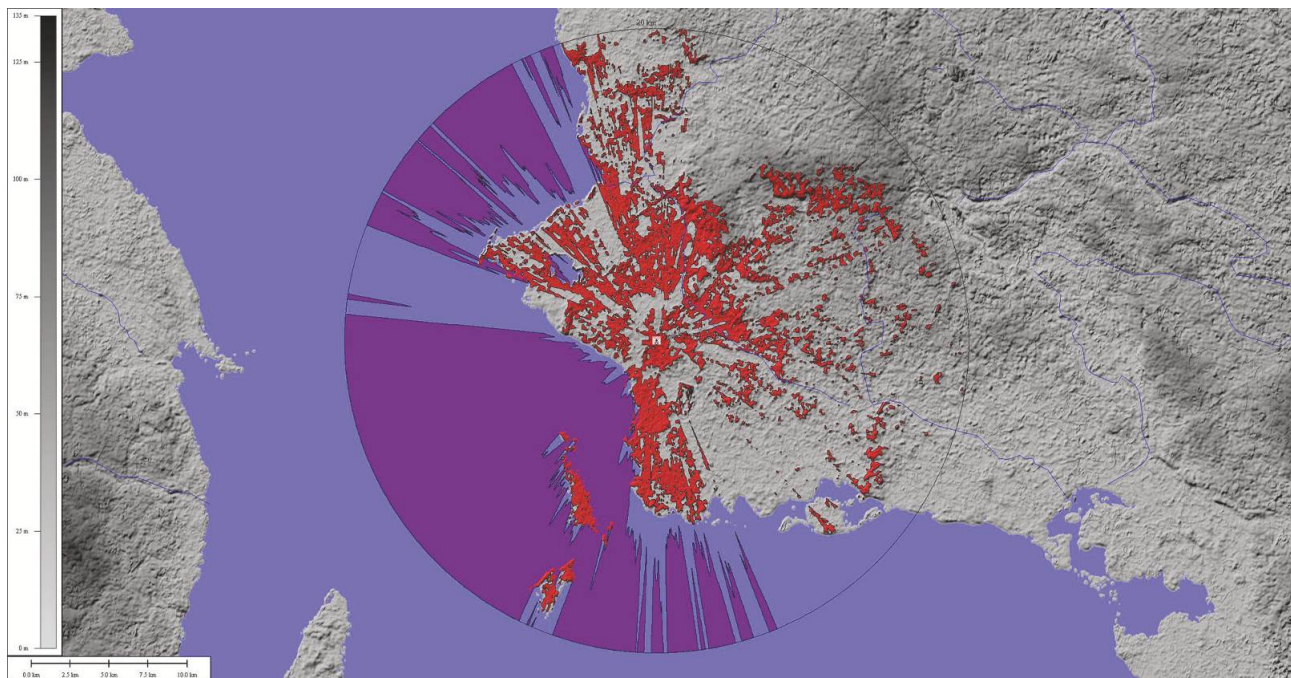
sense. However, analysis of the viewshed (Fig. 13) shows that the Borgbjerg is visible from exactly those distant areas that are distinguished as sites of depositions. Furthermore, it is particularly interesting that – by contrast – from areas to the southeast, where hoards are absent, the Borgbjerg is not visible.

Comparative observations in other hoard landscapes would be most welcome. They could show that the term ‘centre of wealth’ is understandable at best as a reflection of the economy of the gift. In a greatly expanded time-perspective, it seems plausible to see the Borgbjerg as a place that was imbued with religiosity anew, either continually or recurrently throughout the millennia.

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1 Långe Mosse. – 2 Mörbylånga. – 3 Mulde. – 4 Vattholma. – 5 Frejlev Skov. – 6 Rue Mose. – 7 Poulholm. – 8 Itzehoe (1-8 in Jacob-Friesen 1967). – 9 Kehmstedt (Reuß 1908). – 10 Berlin-Buch (Seyer and Michas 1994/1995). – 11 Stölln (Jacob-Friesen 1967). – 12 Hindenburg, (Jacob-Friesen 1967). – 13 Vietlühbe (Wüstemann 2004). – 14 Sønderup. – 15 Skelskør. – 16 Holsteinborg.

Fig. 13 Viewshed analysis of the Borgbjerg area (T. Vachta; Aster Gdem is the property of Meti and Nasa).

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AN ARCHAEOLOGICAL OUTLINE OF RITUAL DYNAMICS AND SOCIAL SPACE

Alexander Gramsch and Thomas Meier

Abstract: This paper outlines an archaeological approach to rituals that separates ritual (praxis) from religion or belief (doxa). Rather than trying to elucidate what people may have thought, we suggest focusing on ritual as action; these actions have a huge communicative and transformative potential and thus it is their effect on society that interests us here. This social efficacy can be scrutinized archaeologically in the longue durée. We apply this understanding to a new approach to the study of hoards and deposits. These, too, are understood as the results of ritual action, i.e. sequenced and communicative practice that involves handling and manipulating cultural knowledge, reproducing and maybe altering it, thus affecting social identities and relations. We therefore suggest focusing on the depositional practice rather than the motivations behind deposition. Moreover we suggest proceeding from the understanding of depositions as ritual actions to analysing what effect they had on space and how they simultaneously were directed by culturally perceived spatial structures.

Keywords: Ritual dynamics, landscape, deposition, communication, social efficacy, spatial structure

Introduction

Doing the archaeology of ritual may seem impossible for prehistoric periods. Images and figurines are rare, and written sources nonexistent. How are we supposed to assess what a prehistoric ritual meant – or whether or not the traces we observe indeed result from a ritual? Isn't prehistoric archaeology at a disadvantage compared to the anthropology of ritual? Moreover, if we want to apply ritual theory to the investigation of hoards or depositions we are facing a traditional dichotomy that classifies hoards either as being religiously motivated or driven by economic interests. This view was challenged by Kristian Kristiansen early on, emphasizing that the deposition of goods may have been directed towards supernatural powers while at the same time affecting 'political alliances' (Kristiansen 1976, 1996: 262). As we will discuss below, analysing depositions as rituals does not imply limiting them to the religious sphere.

In fact, archaeology is in a position that offers new perspectives and new approaches to the study of ritual. However, to utilize these perspectives and approaches fully requires a revision of some of our assumptions. On the one hand the sources we have for studying ritual demand us to outline a clear-cut relationship between material culture and ritual action. On the other hand, archaeology can contribute to the study of ritual by approaching ritual through action and body rather than language and mind. This allows a better understanding for the dynamics of ritual, and it enables us to assess the long-term effects of rituals on society.

Ritual as action

Traditional archaeology explicitly or implicitly agreed with Hawkes' 'ladder of inference' that placed religion on the highest and least accessible 'rung' (Hawkes 1954:161f.). Ritual was understood as the visible expression of religion, therefore approaches to ritual aimed at unveiling the religious sphere – the 'myth behind the rite' (e.g. Spiro 1973:97; Renfrew 1985). This attitude was not only in line with the dominating phenomenological paradigm within cultural anthropology (e.g. Frazer 1890; Otto 1917; Eliade 1959), it was also supposed to pave the way to 'prehistoric thought'. Following Durkheim's

(1912) definition a sharp distinction was made between mundane and religious thought, with ritual being the prime way to express the latter (Radcliffe-Brown 1952:143; Insoll 2004: ch. 2 on the history of research).

Moreover, many archaeological approaches to ritual paradigmatically focused on its supposed conservatism evident both in its invariable articulation of religion and tradition and in its sturdiness, its form remaining static.

Meanwhile, not only has Hawkes' ladder been challenged (e.g. Bertemes & Biehl 2001), but a shift can also be observed concerning the understanding of ritual as static on the one hand and its anchoring in the religious sphere on the other hand. For example, Sally Moore and Barbara Myerhoff (1977) detached ritual from the religious context, employing it also for non-religious processes. Clifford Geertz (1973) focused on the significance of ritual action for the cultural web of meanings and for social communication. Attention finally turned to the actions themselves and how they help social groups to generate and regenerate and to present and negotiate differences (e.g. Schechner 1977; Tambiah 1979; Bell 1997).

These concepts were also applied to archaeology, turning to the actual ritual practices (e.g. Meier 2002; Gramsch 2007; Kyriakidis 2007; Marcus 2007; Renfrew 2007). However, these approaches still often focus on the motives behind the actions rather than on their social effects. Those who are interested in religion, rather than in practice and its effects, emphasize that ritual usually forms an element of religion (Insoll 2004:77). However, the religious or ideological sphere can also always be understood as part of the social; Kristiansen, for example, proposes that rituals that were introduced in Scandinavia by the beginning of the Late Bronze Age were part of a social and economic consolidation, economy and ideology thus being unified in the reproduction of society (Kristiansen 2010:176, 185).

We want to argue for an approach that centres on the effects rituals have had rather than on what prehistoric groups may have thought or how they may have motivated the ritual actions emically. Not only do explicit motivations – deriving from the

religious sphere or not – and actual effects of rituals diverge, we moreover cannot assume that all actors would follow the same (religious) explanation for what they are doing and why. Thus, we separate cult (*praxis*) from belief (*doxa*), focusing on the former (cf. Durkheim 1912:36f.; Rappaport 1999; Bertemes & Biehl 2001:16).

Ritual action as communication

We therefore argue for an archaeology of ritual that is concerned with the social effects of ritual and the material expressions of both rather than with prehistoric religion. Rituals act upon social actors because they are public and highly visible, repetitive and nevertheless open to individual adoption, because they involve a number of different social actors and have the potential to transform social reality (Michaels 2003; Köpping et al. 2006). Following Geertz we can say that rituals not only are ‘models of’ social identities and social relations, but also ‘models for’ these (Geertz 1966, 1987:52): they help in creating, negotiating and maintaining social identities and social relations.

This transformative power derives from the dialectics of ritual practice. As public and repetitive actions rituals are governed by existing structures and at the same time they create and change these structures (Bell 1997:88ff. and passim; cf. Bourdieu 1972; Giddens 1984). Rituals are part of the cultural web of meanings – i.e. the historically derived complex of ideas, references, meanings, practices etc. – not only because they may be able to express these ideas etc. in a symbolic form, but because the ritual actions themselves generate culture. Social actors communicate through, for example, the treatment of the human body (Gramsch 2007, in print; s.a. Kus 1992; Hamilakis, Pluciennik & Tarlow 2002; Nilsson Stutz 2003, 2008; Van Wolputte 2004; Joyce 2005), and they communicate less about their religious beliefs, but about notions of identity and body, about historical knowledge and how this may be transformed, about their attitudes towards their *Lebenswelt*, about their social relations. The action itself is communicative, and this communication enables them to adjust their knowledge and social structure and thus to maintain both. Ritual is therefore much more than a mere reflection of religious thought; it is part of the cultural sphere, which is not one field among others – economy, social structure etc. – but cross-cuts all parts of a society and allows communication and agreement about values, models and aims. The meaning of ritual therefore does not rest in an (imagined) *doxa*, but the concrete performance in a particular context itself creates meaning.

Criteria for ritual action (religious or not)

We have already mentioned a number of criteria that help to define actions as rituals. Summarizing and elaborating these criteria – following Michaels (2003:4f.) – demonstrates that ‘ritual’ in fact is not necessarily linked to ‘religion’:

Sequenced performance

Rituals are a sequence of intentional actions, requiring actors and spectators. They thus are performative actions embodied in space and time. Often the actors (and bodies) involved are modified, both to frame the space and time of the ritual (see ‘Framing’) and to communicate social transformation (see ‘Efficacy’).

Formalization

Ritual actions are usually repetitive and, due to their public

character, imitable. Mimesis, i.e. their ability to be imitated, is an important characteristic. Still, precisely because they have a certain accepted and reproducible form, this form can be challenged and changed. Not only the change, but also the maintenance of form, requires the agent’s constant input.

Framing

Using certain objects and/or spaces and/or bodily markers, the agents frame the ritual. They thus demarcate both beginning and end as well as ritual and non-ritual action and space, for example changing clothes, ringing a bell etc. The agents thus stipulate that this is a ritual.

Efficacy

Rituals are effective because they effect the transformation of e.g. social identity: from child to grown-up, from student to academic, from worker to football fan etc. They may also effect the transformation of space into a place (see below). These effects may be non-permanent or require recurring renewal.

Web of meaning

Rituals involve cultural markers – objects, gestures, places, words etc. – that refer to existing and generally accepted cultural knowledge – values, ideas, norms. These markers sublimate the actions, frame them and enable the communication through and about them. They enable rituals to be both models of and models for social relations and social identities, giving the actions the potential to be socially committing.

This is in line with Turner’s definition of ritual as ‘prescribed formal behaviour for occasions not given over to technological routine’, without necessarily following his addition: ‘having references to beliefs in mystical beings or powers’ (Turner 1967:19).

The dynamics of ritual

Rituals, as has been said above, are repetitive public actions. As such they not only reproduce practice and structure, their actual performance through social actors eventually leads to structural changes. Ritual itself is not conservative, it is constantly reinterpreted, renegotiated and transformed (Rappaport 1999). Again, it is usually neither feasible nor is it necessary to reconstruct what the actors thought about why they may have changed a ritual or not. What matters is the efficacy: if these changes came into effect and were accepted socially, we have to ask why they were successful and what they resulted in. The social agents always have to decide – and sometimes they do so implicitly – whether or not they want to maintain the form or reform it, adapt it to a changing social structure or to external influences, or to give it up altogether.

Prehistoric archaeology has the potential not only to grasp the performative character of ritual practice, but also its dynamics and its long-term efficacy. For example, repetitive actions such as depositions may result in turning space into place (cf. Gramsch 1996) by giving it cultural meaning; the actors themselves may be unaware of this ‘depth effect’ (Wulf 2005) of ritual action, but its efficacy and dynamics are perceivable by archaeology. This approach to ritual actions enables archaeology to tackle questions concerning the role of objects, bodies, but also spaces in cultural

and social change without being bonded in a hopeless quest for (imagined) belief.

Depositions as ritual actions

Recent years witnessed a renaissance in the concern with rituals in prehistory and history. Archaeology usually focuses on burials and sanctuaries, and has begun to shift its attention from a formal analysis of objects to a contextual analysis of actions (e.g. Andrén 2002; Gramsch 1995, 2007; Kyriakidis 2005; Meier 2002). Following a ‘performative turn’, architecture and grave goods now are understood as remnants of performative actions that have the potential to present and maintain or change both social relations and social identities. A neglected archaeological category in this respect is deposits (but see Hansen in this volume, and Kristiansen 2007, 2010 for a social and economic interpretation of depositional practices as conspicuous consumption).

Unlike burials and buildings, deposits first and foremost are defined negatively: they are neither the relics of graves nor of settlements (cf. von Brunn 1968; Hansen in this volume with further references). They are the result of acts that we summarize as depositions, but which may be very dissimilarly motivated. Nevertheless, deposits are usually interpreted either religiously – as gift to the gods (Hänsel 1997) – or economically – as hidden treasures (Künzl 1993 and Fischer 1999 for the Roman period; critically: Rieckhoff 1998 and Hobbs 2006). Sacral reasons for depositing goods are sought for where we are observing a high number of depositional acts without detecting evidence for crises or riots. Since profane motivations thus seemingly have to be ruled out, the deposition of ‘riches’ must follow irrational and, therefore, religious thought.¹ Kristian Kristiansen, on the other hand, considers the deposition of metal in Late Bronze Age Scandinavia as ritualized because it can be understood as structured action, corresponding to the settlement structure (Kristiansen 2010:185f.). Moreover, where the goods were deposited in a manner that looks irretrievable to us (but see Geißlinger 2004; Becker 2008) – in bogs, rivers, lakes etc. – again the actions were perceived as religiously motivated, as sacrifice to numinous powers (e.g. Bradley 1998). Hansen (in this volume) criticizes that this view does not encompass the various social dimensions of the practice itself.

In contrast to this attitude, hoards deposited in warlike periods are constantly interpreted as the results of safekeeping, even where the character of the deposit matches that of ‘sacred offerings’ in wet environments (cf. Hobbs 2006). Finally, certain characteristics of the material of the deposited objects, such as the sources of the metals, the kinds of alloys, the types of objects, and the character of the assemblage, are understood as demonstrating the depositions of craftsmen or merchants who temporarily buried their goods without being able to retrieve them (cf. Huth 2008).

All these interpretations have in common that they try to explain the thinking of the actors rather than their actions and the subsequent effects. They all follow our own logic, based on the economically-driven functionality of Western thought (Brück 1999), rather than asking for the historical contingency of the actions and their outcome.

We suggest understanding depositions as ritual actions: they, too, are repetitive, following a certain sequence or form (cf. Marcus 2007:45f.). They are mimetic, handling and manipulating a

certain cultural knowledge, reproducing and maybe altering it. Analysing the characteristics of hoards or deposits of a particular period allows inferring the rules that structured the depositing actions. Criteria that signal the ritual character of deposits can be the milieu in which objects were deposited, the previous treatment of the objects (e.g. burnt, bent, broken or undamaged), their provenance, or the composition of assemblages, i.e. which objects were selected or excluded. The recurring form of these ritual actions as well as their alterations can be interpreted concerning their efficacy, without attempting to reconstruct the thinking of the actors, be it primarily religious or economic or other.²

The spatial efficacy and framing of ritual action

Space and landscape are more than the physical background for human action, they are socially and culturally constructed and act back into society and culture (Gramsch 1996). Depositions as ritual actions had an effect on space and simultaneously were directed by culturally perceived spatial structures (Fontijn 2002; Ballmer 2010). Depositing single or groups of objects turned space into place, giving it a certain meaning, a sense of place. The deposition thus was a transformative act with spatial efficacy. The deposits acted as markers for the social actor(s) that created them. Unlike monuments that may have been reused and reinterpreted by later groups (Bradley 2002; Tore Artelius, this volume), we may assume that deposits were a part of the cultural knowledge only of their contemporary society. Thus they potentially mirror how space and place and spatial structure were understood, (re) created and changed. However, it is not only the actions resulting in deposits, but also the landscape features where these actions were performed that have to be considered. The transformative acts may have been linked to distinguished natural or previously culturally defined places such as a pass or a passage, and also to sites, which are totally meaningless or unspectacular to our (romanticized) perception of the landscape.

Such an analysis of deposits as ritual actions that are re-structuring culturalized space asks about the temporal and spatial contexts in which we can detect manipulations and transformations of the form of the ritual and their relation to topographical features (Ballmer 2010:124). Can we reconstruct some sort of ideal form, i.e. is there an ideal ‘script’? Can we observe a divergence between that ‘script’ and the actual performance, in accordance with certain social-spatial or topographical features? To answer these questions analysis would require a comparison of stringency or tolerance or deviance of these spatially-framed rituals in particular regions over a longer period, investigating the conditions in which strictness or deviancy were possible. Analysis would require scrutinizing these factors in relation to topographical features to be able to infer how spatial structures may have been reinterpreted over time. Can we observe particular places that had to be marked through ritual action to allow a society to constitute or transform space? Do some places permit more strictness or more deviancy over others?

Depositions as ‘script’ and *praxis*

We advocate an approach to the analysis of deposits that focuses less on the result – the deposit or hoard – and rather on the act – the deposition. Depositions can be understood as ritual actions – repetitive, formalized, following a ‘script’, perhaps public, involving bodies and objects, framing time and space, transformative and transformable, and thus socially, but also

¹ For a critique of the underlying premises see Brück (1999).

² Not only is economic functionality a characteristic of Western thought, but the dichotomy between religious and mundane thinking or action also cannot be assumed for all societies in all periods.

spatially effective. Such an approach scrutinizes the relationship between 'script', *praxis*, objects and landscape. Comparing a large number of depositions can enable us to reconstruct the 'script'. The depositions that are compared must be temporally and spatially connected and part of the same cultural web of meanings. The 'script' may be reconstructed analysing components such as milieu (wet, dry), treatment and position of objects, their previous life histories, their provenances and the composition of the assemblage. This should enable us to develop criteria for recognizing the 'script' and its modifications, its dynamics. Where no 'script' is discernible, we may assume that the deposit is not the result of a ritualized deposition.

A next step should relate the depositional *praxis* to topography (cf. Ballmer 2010:125f.). This not only includes physical landscape features, but also their relation to each other and to the wider landscape. How are deposits dispersed in the landscape? Is space unfurled to different degrees through these depositions? Can we connect the dynamics, i.e. the modifications of the 'script' with certain landscape features, either topographical or related to the existing cultural landscape? For example, we may detect a rather 'orthodox' core area and an increase in the dynamics when moving to the periphery, or 'unorthodox' depositions may be correlated to certain topographical features possibly interpreted as liminal. Boundaries in space may be special foci for negotiations over 'scripts' or other parts of the web of meaning. Social communities constitute themselves in particular at boundaries, where they have to establish the border between self and other through performative action; thus boundaries directly contribute to the constitution of collective identities (cf. Donnan & Wilson 1994). Performative actions at boundaries not only present and transform knowledge about identities, they may also be related to the crossing of boundaries. Crossing boundaries challenges one's self-perception and self-assuredness and may require that the crossing is manipulated ritually in a rite of passage to counter the liminality of both space and social actor; this may include motives of inversion in the script of the ritual (cf. van Gennep 1909, ch. 2; Turner 1969).

In fact, depositions in various prehistoric settings were performed at landscape components such as deeply cut valleys or topographical features like rock faces. Bradley (1998:178ff.), for example, demonstrates that social groups in the Iron Age in Britain, which can be defined on the basis of the distribution of coins, deposited goods in large numbers in wet milieux at borders between two such groups. Fontijn (2002:271) notices that depositions in Dutch regions were performed offside of intensely used settlement and agriculture zones, i.e. in peripheries defined through historically differing types of use. Ballmer (2010:126f.) shows similar distributional patterns by transforming the ethnographical example of the Khanty of western Siberia into a hypothetical archaeological record.

A further step should relate the depositional *praxis* to time. In the *longue durée* we can try to detect how depositions were adapted to changing social and cultural contexts and were enabling or furthering these changes. These adaptations or modifications refer to the components of the ritual practice specified above, but also to the degree of freedom for manipulating the 'script' or not: phases with a strict obedience to the 'script' may give way to phases of greater variation and vice versa.

However, we have to keep in mind that the spatial context also contributes to the potential variation. Boundaries or passages may require greater flexibility, core areas may be under stricter

surveillance. The liminality of the passage may have caused greater dynamics and/or ritual inversion over time in the depositional practice. An example is 'foreign' objects deposited at topographical passages, such as bronze objects from various regions and different periods deposited where the river Inn leaves the Alps (e.g. Meier & Wild 2003). At Ría de Huelva a huge number of 'strange' objects, deposited in a locally unusual (wet, broken) manner are interpreted as an inverse pattern due to the liminal position of the place between sea and land (Ruiz-Gálvez Priego 1995).

In place of a conclusion

With this paper we are very happy to contribute to a collection of articles honouring our highly esteemed colleague, Kristian Kristiansen, and we hope that he enjoys our approach – despite the fact that it may be contrary to some aspects of his own multifaceted and comprehensive work. Kristian is always highly interested in prehistoric religion and cosmology and their intersections with society and economy (e.g. Kristiansen 1984, 2006). He also contributed substantially to the study of the life history of people and things and of rituals (e.g. Kristiansen 1999, 2008). In his PhD thesis he investigated the chronology and social and religious history of hoards in Bronze Age Denmark (Kristiansen 1976), and subsequently he pointed to the unrecognized information potential in the metalwork of Bronze Age hoards (Kristiansen 1996, 1999). And let's not neglect his constant critical participation in debates concerning the history, epistemology, theory and practice of our discipline (e.g. Kristiansen 1981, 2001, 2004). Without these debates we wouldn't have had the terminology, concepts and critical awareness to develop our approach. His work thus not only enables but stipulates a critical, self-reflexive and theoretically based approach to depositions as ritual actions with social significance as it is pursued here. Therefore we are in no doubt that he appreciates our efforts to provide a clear-cut theoretical basis for the study of rituals and their social and spatial efficacy – even more so since this approach can indeed contribute to a wider understanding of Bronze Age ritual practices and social changes in particular.

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VIOLENT DEATH AND WETLANDS: SKELETAL REMAINS FROM GOTLAND

Sophie Bergerbrant, Christina Fredengren, Petra Molnar and Camilla Löfqvist

Abstract: This article examines an overlooked area of research: the bog skeletons. The focus is on remains found in Alva Myr, a former wetlands area on the island of Gotland, Sweden. The results from osteological analyses of human remains are presented.

Keywords: Neolithic, Bronze Age, Iron Age, bogs, human remains, violence

Introduction

There is no find more enigmatic than that of the bog bodies. These human remains have achieved an iconic status and are known to a wider audience through the publications of, for example, Glob (1969) and Seamus Heaney's poem (1973), 'The Tollund Man'. Heaney captures the stillness of a human sacrificed to the goddess of the watery landscape and at the same time describes the social drama of violent action. The popularity of bog bodies has been long-lived, and can be seen in many publications, for example van der Sanden (1996), Asing and Lynnerup (2007), Fischer (2007) and Kelly (2006) or Mannering and Lynnerup (this volume).

This paper draws on some of the initial results from two sister projects dealing with human remains deposited in waters in the Scandinavian area. The project *Depositions of people in wetlands during the Bronze Age, with a particular focus on Southern Scandinavia* is lead by Dr Sophie Bergerbrant, and studies an overlooked category in South Scandinavian Bronze Age research by focusing on human remains from wetlands. A number of oak-log coffins with human remains found in wetlands exist from the Early Bronze Age (1700-1100 BC), and there are also a number of human remains from all periods found in wetlands. It seems most likely that they ended up there for a variety of reasons. The project aims to broaden the discussion of the treatment of human remains in the Bronze Age, as there seems to be more variation than previously thought. The other project, lead by Dr Christina Fredengren, *Tidens Vatten* (The water of the times/ Human and nonhuman sacrifice in Late Bronze Age and Iron Age transformations), works to provide an overview of the Swedish human and animal remains depositions from watery places and focuses on the periods from Late Bronze Age to the Viking period. With a basis in post-human theory, it investigates when the practices of depositing remains in water were common, who was deposited, how they were treated in life and death and how the relationships of the deceased with other human and non-human actors were expressed both in life and death. It focuses on the extent to which these depositions were different from burials on land. By investigating the networks of these individuals through a variety of laboratory techniques this study aspires to provide a meeting place for the Humanities and Science. The project will also explore commonalities between Celtic and Nordic traditions and draws on the project *Islands of the Dead*, which deals with human remains depositions and a re-reading of Celtic mythology dealing with death and water (Fredengren forthcoming).

Bog bodies have tended to be the main focus for research to the extent that bog skeletons have been left out. Pia Bennike

distinguishes between bog bodies and bog skeletons, but has shown that this is often due to the conditions in bogs. Some bogs/wetlands preserve the skin while others are better for bone (Bennike 2003:39). The sole focus on bog bodies preserved as tissue has, according to the authors, led to a skewed understanding of the practice of the deposition of people in wetlands in prehistory. Ongoing studies in museum archives have shown that skeletal remains from wetlands have been noted from approximately 80 locations in Sweden (Fredengren 2011) and over 500 from Denmark (Ravn 2010). Due to a perceived lack of material, Sweden has not been a focus for research on bog body/skeletons to date, but this is something that this article intends to address.

This paper deals with a geographical area where the two projects intersect, the island of Gotland, located in the Baltic Sea on the east coast of Sweden (see Fig. 1). This paper will present some preliminary results and is based on osteological analysis and the results of an ongoing radiocarbon dating programme. The osteological analyses have been carried out by Dr Petra Molnar (the remains from Frigsarve) and Camilla Löfqvist (the remains from SHM 20224). Specifically, the paper deals with the case study from the area of Alva Myr, where the two projects physically coincide.

The map (Fig. 1) shows the location of human and animal remains depositions in wetlands on the island of Gotland that have been located so far in the collection of Statens Historiska Museum (SHM¹). These range in date from the Middle Neolithic period to the Vendel period; the Roma myr, Stormyr and Lillmyr are not discussed here and will be dealt with further in the project *Tidens Vatten*.

Osteological method

During the osteological investigations, methods for age and sex estimation used were those presented in Standards (Buikstra & Ubelaker 1994). Traits for sex estimations were from the cranium and pelvis. Morphological traits for the age estimations were used from the pelvis (Buikstra & Ubelaker 1994) as well as dental wear (Brothwell 1981). Where possible, measurements were made of the long limb bones for stature approximations according to Trotter and Gleser (1952) and Sjøvold (1990). Few bone elements were complete and therefore some measurements were estimated. Due to this, and to the fact that the two methods used produce slightly differing results, the statures should be considered as rough approximations.

¹ All short forms SHM and a number show the objects/skeletons museums number.



Fig. 1 Location of Gotland and map of locations on the island with depositions of human and animal remains (Roma myr, Alva myr, Stormyr, Lillmyr).

Alva Myr

While the human remains depositions from this locality has been noted in various publications there has never been an overview of the material. The dating has been insecure and mainly based on artefacts associated with the remains. This is problematic, as relying on object associations only runs the risk of understating the multi-period nature of various depositional sites thereby underestimating their significance. While Alva Myr is best known for the Bronze Age oak-log coffin burial from Frigsarve (Floderus 1931), there were also other human bones retrieved from these general wetlands. These were found in a location described in the

museum record as located c. 1200 m south-west of Rone church in the same bog as the coffin (SHM 20224). The remains were retrieved from a disturbed deposit located in what seems to have been a marl/mud layer (Swedish: *kalkävja*). Due to the association with artefacts found nearby the human remains which date to the Iron Age, the skeletal remains were registered as belonging to the Iron Age, possibly to the Migration period (c. AD 375-550). The artefacts found were a circular bronze clasp, an amber ring and eight beads of glass (SHM 20224). Our osteological analysis has shown that the remains derive from up to five individuals, four adults and a juvenile. The state of the bone such as colouring, condition and fragmentation indicated that the bone assemblage

could be divided into two groups, which is also supported by the radiocarbon dating, with what may be an earlier group of bone representing four individuals and a later deposition represented by at least one, better preserved individual.

Neolithic (4000-1700 BC)

The first radiocarbon date of one of the human remains from the collection of bones of SHM 20224 points to a much earlier period than the artefact depositions. The oldest dated deposition of human remains from Alva Myr belongs to the Neolithic period (3370-3090 BC²) and consists of fragmented skeletal bones of an adult. This is an individual of indeterminate sex, with a slight possibility of being a female based on the measurement of the humerus. There are traces on the distal diaphysis of the left radius (lower part of the bone shaft) which possibly indicates gnawing (animal), but the preservation of the bone makes this hard to further estimate. If there are indeed traces of gnawing this suggests that the bones would have decayed in such a place where scavenging animals might have had access to the bone or easily could have recovered them from the soil. It is possible that this reveals a practice where these human remains were moved from a land location to a secondary position in a watery environment.

One individual was represented by a left clavicle, left and right humerus, radius and ulna. The remaining three individuals were represented by skull fragments, one tooth, vertebrae, clavicle, scapula, humerus, radius, ulna, ribs, hands, coxae, femur, tibia, fibula and feet with all the remains being in a deteriorated and fragmented condition. The analysis suggests that one of these individuals was a juvenile while one recovered tooth suggests the presence of an individual of 25-35 years of age. Some of the fragmented vertebrae exhibit traces indicating degenerative changes which might be associated with heavy work/activity stress. Two rib fragments displayed grey bone deposits and fine pitting possibly associated with a chronic respiratory condition.

There are no definite signs of violence or the cause of death visible on the bone fragments. However, one longbone fragment displayed a very questionable cut, the rough edges of the cut indicating probable postmortem damage. Further, the rather sharp and pointy appearance of a second longbone fragment might suggest it had been cut but this is very uncertain. A couple of bone elements displayed pointy depressions that suggest gnawing (animal), but as with the possible cut marks these traces are hard to estimate due to the very deteriorated condition of the bone.

Bronze Age (1700-500 BC)

In June 1929, while ploughing land that had recently been transformed from wetland to farmland, an oak-log coffin was found in Frigsarve (SHM 19099). The artefact dating suggests a PII/PIII date (Floderus 1931; Hallin 2002:27). The find contained an almost complete skeleton. The osteological analysis showed that it was the remains of a man. The artefacts found in the coffin comprised a sword typologically dated to Montelius Period II and a fibula typologically dated to Period III (1300-1100 BC), and close to the tip of the sword was a smaller resin cake, however this was probably not its original position (Floderus 1931:284-287). The artefacts were removed and taken for safe-keeping before the archaeologist came to the site, although there were traces of patina on the bones from the bronze on the left side of the hip suggesting that the sword had probably been placed there (Floderus 1931:

284). There are parallels between this burial and that of the more well-known oak coffins burials in Denmark. Unfortunately, the oak-log coffin has not been preserved (Bergerbrant 2007:18), so exact details of the coffin can only be studied from the drawings and photos taken by Floderus, nor is it possible to conduct dendrochronological dating. The majority of the Danish oak-log coffins date to a short period of 150 years, from the fourteenth and beginning of the thirteenth centuries BC (Christensen 1998, 2006:187; Holst, Breuning-Madsen & Rasmussen 2001:128-131; Jensen 1993:187-189). Hornstrup et al. (2012) has come with new chronological dates for the Montelius Bronze Age periods, based on radiocarbon dates from the Danish Bronze Age do they date the transition PII/PIII period to c. 1360-1270 BC, indicating that the coffin from Frigsarve is contemporary with the Danish oak-log coffins. Despite the fact that it was found by a farmer and had been tampered with prior to the arrival of the archaeologist (Floderus 1931:285), one can see similarities with the more well-known male oak-log coffin burials (cf. Bergerbrant 2007: chapter 4).

The osteological analysis showed that there were several perimortem injuries present and these were investigated and recorded closely under the microscope. The calotte and the frontal bone were preserved from the cranium. All teeth from the lower jaw and two teeth from the upper jaw were present. There were no skeletal parts from the visceral cranium. The remains were relatively well preserved. A few vertebrae were found, some of which were discoloured with traces of green, indicating that an object of bronze had been placed in this area. The skeleton was that of a man between 40 and 50 years of age with an estimated stature of 168-175 cm. There were degenerative changes in the vertebrae, scapulae and sacrum including eburnation in the vertebrae. However, this is not an unusual trait in older individuals. The cranium exhibited both blunt and sharp force trauma. On the frontal bone was a healed rounded impression, about 1.5 cm, caused by blunt force trauma. Several sharp force injuries were noted on both cranial and postcranial skeletal elements. These are all perimortem cuts as there are no signs of healing. The cranial injuries consist of a fan-shaped cut-mark. The shape of the mark is consistent with a sharp cut into soft bone tissue with a sideways sliding and twisting motion of the cutting implement. It is located laterally and superiorly to the healed blunt force injury on the left side of the frontal bone. Further smaller cut marks are present in this part of the skull. On the inferior portion of the mandibular rami there are numerous slight cuts barely visible macroscopically. Further sharp trauma has been recorded on a rib, the humerus, tibia and clavicle. The rib shows cut marks as well as modifications with a sharp instrument on the inferior rim. This injury is consistent with the insertion and twisting of a sharp implement between two ribs, prizing them apart. The right humerus and left tibia show a cut/scrape injury each along the posterior mid-shaft. Both are between 10 and 12 cm long. The cut on the clavicle was also placed posteriorly on the shaft.

Both Floderus (1931:288) and Lindsten (1933:321) mention the now lost oak-log coffin found in Asseberga, Västergötland as a parallel to this find. This find was judged as Early Bronze Age by Hildebrand due to its similarities with the oak-log coffins from Borum Eshøj. The coffin contained a skeleton, textile remains and a chip-box³ (Hildebrand 1879; Floderus 1931: 288; Lindsten 1933: 321). That it is unusual in the context of oak-log coffins from the Bronze Age found in wetlands is true, however it is not as uncommon as Floderus and Lindsten believed. There is

² Ua-44020 Sk39.2A, FID 785771 4524+-37 All dates are calibrated with Oxcal

³ Unfortunately a search for this oak-log coffin, skeleton, textile or chip-box in the museum has not produced results, despite the fact that it has a museum number, SHM 6366.



Fig. 2 The oak-log coffin found in Frigsarve, Alva Myr. Photo: Floderus, ATA.

for example an oak-log coffin with skeleton found in a bog in Hagestads mosse, Scania, but unfortunately the finder immediately returned it to the bog so we have no further datable information about this find (Bergerbrant 2007:14). There is also a find from Hove å, Zealand, Denmark, of an oak-log coffin containing a skeleton that has been radiocarbon dated to the Early Bronze Age.⁴ There are number of skeletons from bogs that might fit into this category, some which have been found in connection with coffins or boats from Denmark, but more radiocarbon dating needs to be conducted (Bergerbrant ongoing work in *Depositions of people in wetlands during the Bronze Age*). Lindsten (1933) has discussed burials in oak-log coffins in wetlands, arguing that this is probably a secondary burial of the deceased as a way to hinder him from returning from the dead (Lindsten 1933:331).

It is difficult to compare this group of depositions to the oak-log coffins found in the mounds prior to being studied in greater detail. It seems that most burials in mounds have been in oak-log coffins even if we have evidence of burials containing half oak-log/half planks, i.e. Charlottenlund, Gentofte parish (Aner & Kersten 1973: cat. nr. 366B). The existing ones that are fully preserved, some with complete clothing (see for example Boye 1896; Broholm & Hald 1940; Bergerbrant 2007), have been found in special circumstances. The mounds were built in a special way that created an iron-pan that locks in water, creating a waterlogged environment (Holst, Breuning-Madsen & Rasmusen 2001). It could be said that the mounds performed a function similar to

that of deposition in a bog. At this stage, however, it is impossible to say if this was intentional or happened by chance. It is possible that it was a conscious choice to slow down time and decay for these special burials.

What makes Frigsarve special, separating it from the known mound burials, except for its place of deposition, is the clear evidence of trauma, both the healed trauma and the cut- and scrape marks on the skeleton. This might indicate that these are the remains of a man who was a warrior or who was possibly still active despite belonging to an older generation in the Bronze Age. These either indicate a violent death or some kind of body treatment, such as de-fleshing. It is difficult to make a fair comparison with the mound burials for two main reasons: first, we have very few burials with preserved bones, and secondly, most of the skeletons were studied a long time ago when evidence for trauma was not investigated in the same manner as it is done now. Therefore, modern studies on the mound material might change this picture. However, to our knowledge there is no dry-land burial with any evidence for scrape marks from this time period. The smaller resin cake presents an interesting connection between burials and wetlands. In Southern Scandinavia a number of resin cakes have been found in bogs, and these are often found in groups of two to six, and are round with a whole in the middle. In Early Bronze Age burials smaller pieces of resin cakes are sometimes found (Broholm 1944:133). It is therefore interesting that a complete resin cake was found at Frigsarve (Folderus 1931:284), as this group of find is normally connected with wetlands.

⁴ K-6301 3020±85 BP (1392-1191 BC) (Arkæologiske udgravninger i Danmark 1994:282).

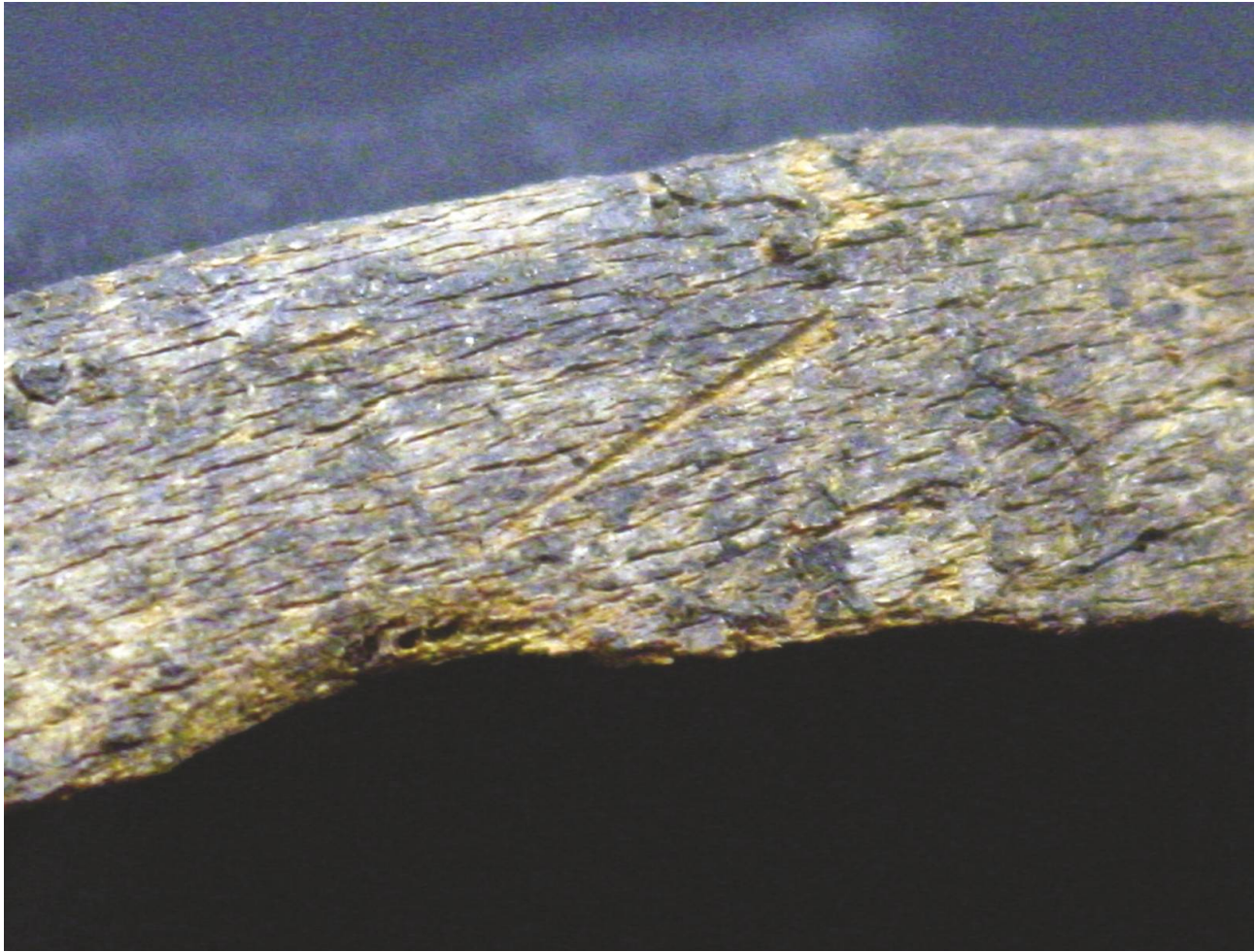


Fig. 3 Alva Myr: cuts and modification with a sharp instrument on the rim of a rib. Photo: P. Molnar.

Iron Age

The second radiocarbon date from the collection of SHM 20224 indicated a death in the Vendel period (AD 610-770⁵). The remains from this individual, an adult female, were both more complete and better preserved than that of the earlier/Neolithic group and also included both scapulae, right clavicle, both humerus, radius, ulna, coxae, femur, right tibia and bones from the left hand. As in the case of the human remains at Frigsarve this person had been exposed to violence.

The skull was dark brown in colour, which indicates that it derived from a wetland context. It was fairly complete but missed visceral/facial bones, teeth and lower jaw. Traits on the skull suggested this was a female. Age could only be estimated from the sutures of the skull as no teeth were recovered, thus giving a wide age span of 28-44 years. The examination of the skull revealed several intriguing marks. Mostly fine, short and narrow cuts on the frontal bone and both parietals but also a more substantial cut running from the left parietale, across to the suture to the right parietale. These cut-marks could be interpreted as the result of scalping. The sharp cut and the 'flaking out' of bone along the edges suggest this was done in fresh and/or soft bone, suggesting it might have occurred perimortem or later/post-mortem but in still soft and moist bone.

Aside from the cut-marks on the skull there were further, but more inclusive, indications of cuts. At least two of the right and two of the left rib fragments looked like they had been cut from the interior but not all the way through and then the fragment was broken off. It seems to have been done with a rather blunt instrument as the edges appear chipped. It is a very vague and uncertain interpretation to suggest these fragments might have been cut. On the left scapula, at the inferior angle (posterior), are a few very thin, fine, shallow possible cuts. However, when viewed through a microscope these cuts are difficult to determine. The distal end of the left ulna displayed a sharp, straight cut across the boneshaft following the curve of the bone. The sharp cut, the straight edges and the 'lifting' of the bone along one edge suggest this was done in 'fresh' or soft bone. The other human remains from SHM 20224 have not been radiocarbon dated yet, but these three individuals show no definite and conclusive signs of violence and are therefore left out of further discussion.

Discussion

The remains from Alva Myr show some common traces despite the wide separation in time. The Neolithic cranium could only be aged to adult but the two others discussed here all belong to the adult/mature category. Due to the fact that we only have one more or less preserved skeleton, it is difficult to see other common traits, such as height etc. However, two of the remains (Frigsarve and the Iron Age skeleton) both exhibit interesting similarities

⁵ Ua-44019 Sk39.5, FID 785746 1364+-30

in after-death treatment. Both crania show signs that indicate scalping or possibly de-fleshing. The Frigsarve wounds are not as numerous as might be expected. A possible scenario is a partial, ritual defleshing act, maybe part of a ceremonial activity and/or part of a burial ritual. As shown above traces of violence can be seen on some of skeletons found in the Gotlandic bogs. They include both traces of warfare and possible ritual actions.

The Frigsarve skeleton also displays other types of trauma, possibly sustained during combat of some kind, that healed during the person's life. Is there other evidence that connects warfare with wetlands? The most famous victims of warfare/raids from the Bronze Age all come from multiple burials, such as: Wassenaar, Netherlands (Louwe Kooijmans 1993; Smits & Maat 1993) and Sund, Norway (Fyllingen 2003, 2006) or from pits on/near settlements such as in Wallburg von Stillfried an der March, Austria (Lochner 1994:216ff). There are sites of single male skeletons that are dated to the Bronze Age without any associated features or artefacts found in connection with different forms of former wetlands from the Early Bronze Age such as Kråkerøy, Norway (Holck 1987:37ff), and from the Late Bronze Age, the man from Granhammar, Sweden (Lindström 2009:356-362), Everöd, Sweden (Molnar & Bergerbrant in prep.). The Scandinavian examples, however, seem to have more varied reasons and life histories than this, and a single explanation cannot apply to all of them. For example, the Granhammar man does not seem to have left this life voluntarily, as there are many traces that he did his best to defend himself (Lindström 2009:356-362). These seem to have been single individuals who ended up in wetlands after a violent end. In the Irish material, depositions of males are particularly common in the Late Bronze Age. The deposition in wetlands could be seen as a ritualized act as it is separated from the more common burial practices where the corpse was cremated and disposed of in token burials. However, the boundary between what was a death resulting from a sacrificial act and final combat may not be clear. These individuals were adults, which shows that they would have lived and functioned in society for a longer period of time. One possibility is that they were warriors who no longer functioned in their role and could not be given ordinary funerary treatment, but due to their persona and role in life had to be given an unusual, yet honorable, ending (Fredengren forthcoming). On the other hand we have the newly excavated sites of Tollense, Mecklenburg (Janzen et al. 2011; Krüger et al. 2012) that seem to hold the remains of one or a number of battles from a short time period in the Early Bronze Age, and the site Alken Enge, Denmark (Holst & Hertz 2012) which is a site with skeletal remains from another probable battle, this time dating to around the birth of Christ. These, however, all differ widely from the oak-log coffin found in Frigsarve. Both Tollense and Alken Enge are on a completely different scale from the other sites mentioned on Gotland. The Bronze Age individuals from Kråkerøy (Holck 1987:37ff), Granhammar (Lindström 2009:356-362), and Everöd are similar in all being of single males of a mature age (none seems to be under the age of 35 and some could be as old as 60 years old). The majority of the people in Tollensen (Jantzen et al. 2011:424-425) and Alken Enge (Selleveid et al. 1984: 139, 245-247) seem to be younger males, even if a few exceptions exist within the material. The wetland deposit of human remains which seems to indicate a larger scale conflict seems to be mainly of younger males, even if both women and children exist in the material (Jantzen et al. 2011:424-425), and this is well in line with the dry-land find of mass burials, where both men, women and children have been found at Wassenaar (Louwe Kooijmans 1993; Smits & Maat 1993), Sund (Fyllingen 2003, 2006) and Wallburg von Stillfried an der March (Lochner 1994:216-219), where we

find all of these categories buried. This differs clearly from the known single individual Bronze Age wetland skeletons which all seem to be male of a more mature age. The Frigsarve oak-log coffin appears to be very much in accordance with the skeletons found in Kråkerøy, Granhammar and Everöd concerning sex, age and the violent end, but differ in that this man has been given a burial that in many ways is very similar to the mound burials. He has been placed in an oak-log coffin, given his fibula and sword as well as a resin cake, and probably underwent some kind of bodily burial treatment before his final deposit.

The remains from the collection of SHM 20224 may be the result of a series of different events. At some stage the Neolithic remains were moved from a keeping place on land, either in a megalithic tomb or they were left to decay on open ground for an unknown time before being deposited in the wetlands, indicated by the traces of gnawing. At some stage these skeletal parts were assembled with the artefacts and Iron Age remains in the bog, as discussed above these comprised the remains of an adult, mature female that could have been subject to partial or complete de-fleshing. This example points to a distinct interaction with human remains and the possible re-use of remains from earlier time-periods in the Vendel period. Recent contract excavations at, for example, Ströja in Norrköping have revealed four skull fragments found outside a hall building. The radiocarbon dates indicate death dates in around AD 700 and 800 (Hjulström 2012). Awaiting the final publication of the dates and find, these suggest a rough contemporaneity with the find from Alva Myr.

It is not uncommon that a bog or a wetland contains human remains from an extended time period. For example, this can be seen in Vimose, Denmark, a site that is most famous for its Iron Age war booty sacrifice, although less well known is the fact that 5-6 skulls have come from the bog, one of which dates from the Early Bronze Age and the rest from the Iron Age (Pauli Jensen 2008), and Skedemosse, which has remains of c. 38 individuals, some of which show traces of violence. Fourteen of these have been radiocarbon dated and the results range from the pre-Roman Iron Age to the Viking period (Monikander 2010: 86-88). Together the material points to an intriguing variation in the treatment of the dead during this part of the Iron Age, where violence directed towards a dying person or a corpse were important aspects. Human bone was used to build up relations, both with the wetland landscape, with central places, as well as with materiality from other time-periods, and these practices require further exploration.

Conclusion

This area around Alva Myr has received depositions of human remains dating to a minimum of three different periods. The oak-coffin burial seems to be most intact. One possibility is that the wetlands have been a traditional location for the placement of both human remains and artefacts, albeit the sequence of dates provide a series with large time-gaps. Another possibility is that the human remains, particularly the collection in SHM 20224, were deposited assemblages that contained human remains from earlier burial(s) that were composed with heirloom artefacts. What has been shown here with the special case of Alva Myr, but also with the added examples, is that there are human remains deposited in wetlands from all prehistoric time periods. Most of these can be classified as bog/wetland skeletons. Comparing this with the new dendrochronological dates from the Danish bog bodies, which in contrast have a much smaller time range, they all seem to date to the pre-Roman Iron Age (Mannering et al. 2010). This shows the importance of detailed studies and a radiocarbon

programme to date these skeletons for us to better understand this phenomenon. Some might have drowned or been the victims of violence, while others may have been sacrificed. It is therefore urgent and essential that meticulous studies should be undertaken to elucidate this overlooked material.

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FROM FOOT TO FACT: NEW LIGHT ON THE FRÆER BOG FIND

Ulla Mannering and Niels Lynnerup

Abstract: Here we present one of the oldest bog body finds in Denmark: the shoe and foot, and two fragments of textile from Fræer. The textile belongs to the group of wrap-around textiles, complete examples of which have been found with other Danish bog bodies. Although fragmented, the Fræer textile matches in every aspect the large group of textiles from the Pre-Roman Iron Age found in the Danish bogs which are characterized by a primary use as garments without further tailoring. The Fræer shoe matches the overall design of the majority of Danish prehistoric shoes. CT-scanning was used to visualize the foot inside the shoe, including tissues such as bone, ligaments, skin and tendons. Examination of the bones indicated that the foot was from an adult individual, probably c. 30-40 years of age at death. The sex could not be definitively ascertained: however, the size of the Fræer foot corresponds to the foot size of Grauballe Man and Tollund Man.

Keywords: CT-scanning, bog body, shoe, textiles, anthropology

Introduction

Bog bodies present unique opportunities for the archaeological, natural and medical sciences. Due to the bog environment soft tissue is often preserved (although bog environments may differ: so-called acidic bogs may be conducive to soft tissue preservation; in other bogs a corpse will become completely skeletonized) (van der Sanden 1996). The presence of soft tissue allows us to examine the skin, which may reveal trauma, e.g. penetrating wounds and cuts, as well minor pathologies such as warts. Interior organs and muscles may also be preserved to differing degrees allowing assessment of these. However, the very presence of soft tissue at the same time makes it difficult to examine the body. One may conduct an ‘autopsy’, but while this has indeed been carried out, e.g. on the Grauballe Man, a bog body dating to the Iron Age that was found in Denmark in 1950 (Munck 1956; Fischer 2012), most archaeologists, conservators and physical anthropologists and pathologists are not too keen on this anymore. Furthermore, just as human skin and collagenous tissues are often well-preserved, so may also textiles and animal skins, deposited with the corpse, be very well preserved.

We here present one of Denmark’s oldest bog body finds – a foot in a shoe and two textile fragments. It is fitting that this publication gives us this opportunity, as Kristian Kristiansen has always been keen to apply modern techniques (here, e.g. we use CT-scanning) on diverse archaeological find materials in order to gain insight into prehistoric societies. While the Fræer find does not date to the Bronze Age, Kristian Kristiansen’s period of special interest, bog bodies have been found spanning the Late Bronze and Early Iron Ages (Mannering et al. 2010), and we thus feel that the subject is well within Kristian Kristiansen’s interest. Kristian Kristiansen has always focused on the people of prehistory, ranging from what language they spoke and their social order and power-structures, to more mundane topics such as household economy and travels. A worn shoe, preserved with the foot still inside, and a worn textile, are perhaps very direct incarnations of the latter subjects!

The Find

In July 1842 a complete mummified body was found lying outstretched and face down during peat cutting in Fræer bog in

Hellum County in north Jutland. During the retrieval the left foot was at first separated from the rest of the body, which was then fully excavated under the supervision of the local priest. It is not known what happened to the rest of the body but probably it was buried in the nearest churchyard as so many other bog bodies were (Mannering 2010). Probably due to the wet and soft condition of the body and the rough handling by workers of this macabre find, only the left foot still inside a skin shoe (NM 7142)¹ and two fragments of the same textile (NM 7141A and NM 7141B) were rescued, and subsequently sent to the Oldnordisk Museum in Copenhagen (Hald 1972: 36-37, 1980: 22), today the National Museum of Denmark.

According to the workers who found the body, they thought it was the body of a woman, but only very few details about the find conditions and the corpse are given in the short report that followed the items to the museum and was later recorded in the museum register. Today the find represents one of the earliest remains of bog bodies and their costumes in the museum collection. The earliest finds are the Undelev Man, who was recovered in southern Jutland in 1797 (Andersen et al. 2011) and the Haraldskær Woman, who was recovered in a bog near Vejle in 1835 (Hald 1980: 56-59).

The textile fragments

Two fragments of the same wool textile were recovered together with the bog body. It is possible that the textile was complete when it was found, but broke into several parts due to the detrimental retrieval method. Textile 7141B measures 70x24 cm and 7141A 29x35 cm (Fig. 1). They come from the same 2/2 twill which has s-twisted yarn in both thread directions. The weave has 4-5 threads per cm in each thread direction (Table 1) (Hald 1980: 22).

Fragment 7141B has one tubular tabby selvedge and one looped border with adjacent loops preserved. The other edges are torn and frayed. The same is true for 7141A. This means that the longest edge of 7141B and the shortest edge of 7141A represent the corners and sides of the starting border of the fabric. All together the fabric was at least 100 cm wide while only maximum 35 cm

¹ National Museum of Denmark catalogue number.

Table 1: Technical details of the two textile fragments

Component	Size (cm)	Binding system	Twist direction	Twist angle	Thread count/cm	Thread diameter (mm)	Selvedge/Border	Dye
7141A warp	35x29	2/2 twill	S	hard	4-5	2-2.6	Plaited from left to right, adjacent loops	luteolin, apigenin
7141A weft	35x29	2/2 twill	S	hard	3-4	2-2.8	tubular tabby	luteolin
7141B warp	70x24	2/2 twill	S	hard	4-5	1.5-3	Plaited from right to left, adjacent loops	luteolin
7141B weft	70x24	2/2 twill	S	hard	4-5	1.5-1.8	tubular tabby	luteolin, apigenin

of the original length is preserved. The warp loops in both pieces are neatly kept in place by a plaiting which in fragment 7141B is linked from right to left while the opposite is seen in fragment 7141A. The point where the two looping directions would have met is not preserved (Hald 1980: 172).

A further important detail in fragment 7141B is crossing wefts which are visible about 50 cm from the selvedge. This probably indicates the centre of the fabric and also the point in the weave where the bobbins from two simultaneously working weavers met and was crossed over. Thus, this feature further supports the estimated width of the textile.

In both pieces coarse sewing thread in overcast stitch are visible near each selvedge, which ends in a knot, but the function of these probably secondary applied threads is unclear (Table 2). The textile today is golden brown, but the dye analysis has revealed that the originally white wool textile was dyed with a yellow plant dye, as both luteolin and apigenin was detected in the yarns (Vanden Berghe 2009). A sample from this textile (7141A) has been ¹⁴C-dated (Ua-33582) and shows that the find belongs to the Pre-Roman Iron Age, 110 BC- AD 60 (Mannering et al. 2010).

It can be concluded that the Fræer textile was originally of very high quality, using a very fine wool type, which gave the textile a soft feel and a very nice drape. Furthermore, the textile was dyed in a yellow colour like many other Pre-Roman Iron Age textiles (Vanden Berghe et al. 2009). Based on the preserved fragments it is most likely that this textile belongs to the group of wrap-around textiles, which is defined as pieces of about 150 x 100 cm. Complete examples of this type have been found in Auning and Borremose (Hald 1980: 20-21, 54-55; Mannering 2011). Though fragmented today, the Fræer textile matches in every aspect the large group of textiles from the Pre-Roman Iron Age found in the Danish bogs which are characterized by a primary use as garments without further tailoring. Only small alterations were added to the textile after being taken off the loom, and sewing is usually linked to secondary use (Mannering 2011). The sewing threads present on the Fræer textile thus indicate that the textile was old and mended or even reused for secondary purposes when placed in the bog with the corpse. Therefore, though the textile undoubtedly suffered considerable damage during the retrieval process, it is still uncertain whether it was complete when placed in the bog.

The shoe

The shoe from Fræer is probably the most spectacular item from this find, as the foot is still preserved inside the skin shoe (7142) (Hald 1972: 36-37). The shoe is dark brown and almost complete and thus three-dimensional, but now flattened due to the preservation conditions (Fig. 2). The shoe is a one-piece shoe



Fig. 1 The two fragments of the Fræer textile (© National Museum of Denmark).



Fig. 2 The Fræer shoe with the foot inside (© National Museum of Denmark).

formed by two pieces. The pieces are sewn together across the ankle of the foot. This pattern results in an asymmetrical design with a curved front seam. The heel seam is straight. The shoe has three eyelets on each side which were used to tie the shoe around the foot. A thin double leather thong, c. 10 cm long, 2 mm thick and slightly twisted, was inserted and preserved in the last inner edge eyelet. The thong is circular, i.e. c. 20 cm long, and one end is pulled through the other to secure it in the eyelet. The seams are sewn with overcast stitch with a round leather thread, 2 mm thick. There are 20 stitches in 10 cm. The shoe is made of goat skin with the hair side on the outside, but the hairs are very much worn away. The shoe was worn on the left foot, and had a separate inlay of sheep skin and was also lined with a layer of sheep wool. Today it measures 14 cm in height and 24 cm in length, which is equivalent to a modern size 38. As the foot and shoe have shrunk considerably since the recovery these measurements do not represent its original size.

Table 2: Technical details of the sewing thread recorded in the textile fragments

<i>Number</i>	<i>Stitch</i>	<i>Function</i>	<i>Twist direction</i>	<i>Twist angle</i>	<i>Thread diameter (mm)</i>
7141A	irregular running	unknown	S	very hard	4.2
7141A	irregular running	unknown	S	very hard	1.5
7141B	overcast	unknown	S	very hard	2-3

In general the Fræer shoe matches the overall design of the majority of Danish prehistoric shoes (Hald 1972), and the one-piece shoe design is part of a very long lasting tradition ranging from the Late Bronze Age to at least the Late Germanic Iron Age (Mannering et al. 2010). All together 20 skin shoes have been recovered from Danish bogs, either together with bog bodies or as single deposits. Most prehistoric shoes have an individual design, even the shoes that come in pairs, which probably reflect a fast and individual production adjusted to the needs and capacity of the producer. Unfortunately, as the right shoe is not preserved, we will never know if this was also the case for this find.

Contrary to the production of textiles in the Pre-Roman Iron Age, the skin and leather technology fully mastered and used specialized sewing techniques in the design. The Fræer shoe is one of the few shoes which is almost complete and not particularly worn. It is not uncommon that wear-holes at the heel or under the ball of the foot were repaired with patches and this indicates that shoes were precious enough to take the time to mend them, although the mending probably was not very strong nor long lasting.

The foot

Since it would be impossible, or probably detrimental, to try to pry out the mummified foot from the shoe, CT-scanning was used for visualizing the foot. Unlike conventional X-ray images, the regions of interest in CT-scans are presented without disturbing superimpositions of juxtapositional structures. Instead of producing a single 2-dimensional image (as an ordinary flat-plate X-ray), the X-ray tube revolves around the item being analysed. Coupled with a specific array for reading out the X-ray-absorption, this means that a CT-scanner will generate an image which represents a slice of an item. The item is moved through the CT-scanner, generating hundreds or thousands of slices, which may be viewed as consecutive 2-dimensional slice images (Hsieh 2002).

In terms of X-raying and CT-scanning, there are two major differences between bog body and medical, clinical images. Due to the acidic bog environment, calcium is leached from the bones, causing a de-mineralization of the bony tissues, which consequently lose their hardness and become pliable (van der Sanden 1996; Lynnerup 2008). When a bog body is X-rayed, the result is often very badly visualized bones, giving the bones an appearance of having been made of glass. Consequently, when CT-scanning a bog body and applying the ordinary range of Hounsfield units for bones, as from clinical work, this may result in the bones not being visualized at all (Villa & Lynnerup 2010). Furthermore, the demineralization is not necessarily uniform, but may differ within the skeletal system or the single bone due to the diagenetic micro-environment. This may generate a patchy appearance of the bone, even though it is morphologically intact. The second difference is due to the fact that other tissues seem to acquire a more radio-dense structure (i.e. the attenuation of the X-ray beams is increased). This is especially seen for some of the connective tissues, e.g. ligaments, fasciae and the subcutis. The

reason for this is probably due to a deposition of soil mineral salts (containing metals such as iron) in collagenous tissues (Lynnerup 2008).

Many bog bodies are also shrunken. While some shrinking may take place in the bog, most shrinkage is probably due to the drying out of the bog bodies once they are excavated. Drying out was previously the only preservational and conservational way to handle excavated 'wet' bog bodies. In the mid-twentieth century more targeted methods were used, such as attempts to substitute the water with alcohols and tannic oils, bark extracts and wax, while today freeze-drying is used. Whatever the method, some shrinkage is probably inevitable, but may be especially pronounced for the older bog finds (Lynnerup 2010).

Due to these diagenetic influences, the tissues have to be delineated (or segmented) manually for every single CT-scan slice. In order to visualize e.g. the different tissue of the Fræer foot and the shoe, a colour-coding is applied 'over' the single gray-scale pixels. Different tissues and organs may be given specific colours. This usually involves a process of identifying the single structures on the single slice images and then following these structures through on the adjacent slices. All the single slices have to be edited, so that that ultimately the single structures are completely delineated (segmented). The colour-coded pixels associated with the various structures may then be extracted, and used as a basis for 3D rendering (Fig. 3). Once tissues and organs have been segmented and visualized, they can then be measured and assessed morphologically (Lynnerup 2010).

The skin, tendons and bones could be visualized (Fig. 3). The first phalange was bent below the other phalanges, probably a result of drying out and shrinkage. The single bones of the foot (the metatarsals and phalanges) could not always be differentiated, nor could the tarsal joints be clearly delineated. The bones clearly showed full maturation with no growth plates, nor recently fused growth plates, nor age-related degenerative changes, indicating that the foot was from an adult individual, probably c. 30-40 years of age at death (see e.g. Lynnerup et al. 2008).

The maximal length of the Fræer foot is 191 mm, and this may be compared to the feet of the Grauballe Man (214 mm) and Tollund Man (190 mm). This could indicate that the Fræer individual was male. For further analyses of this, the calcaneus was measured and compared to modern forensic formulae for sex-determination based on the size of this bone (Table 3) (Zakaria et al. 2010; DiMichele and Spradley 2012; Gualdi-Russo 2007). This result points to a female sex, but as these formulae are based on recent populations, thus adding a further source of error to the error already introduced by the probable shrinkage of the Fræer foot, they are inconclusive. If we allow for a small degree of shrinkage, as well as the first phalange being twisted under the other phalanges, the Fræer foot measures align (just) with male measures (Table 3).

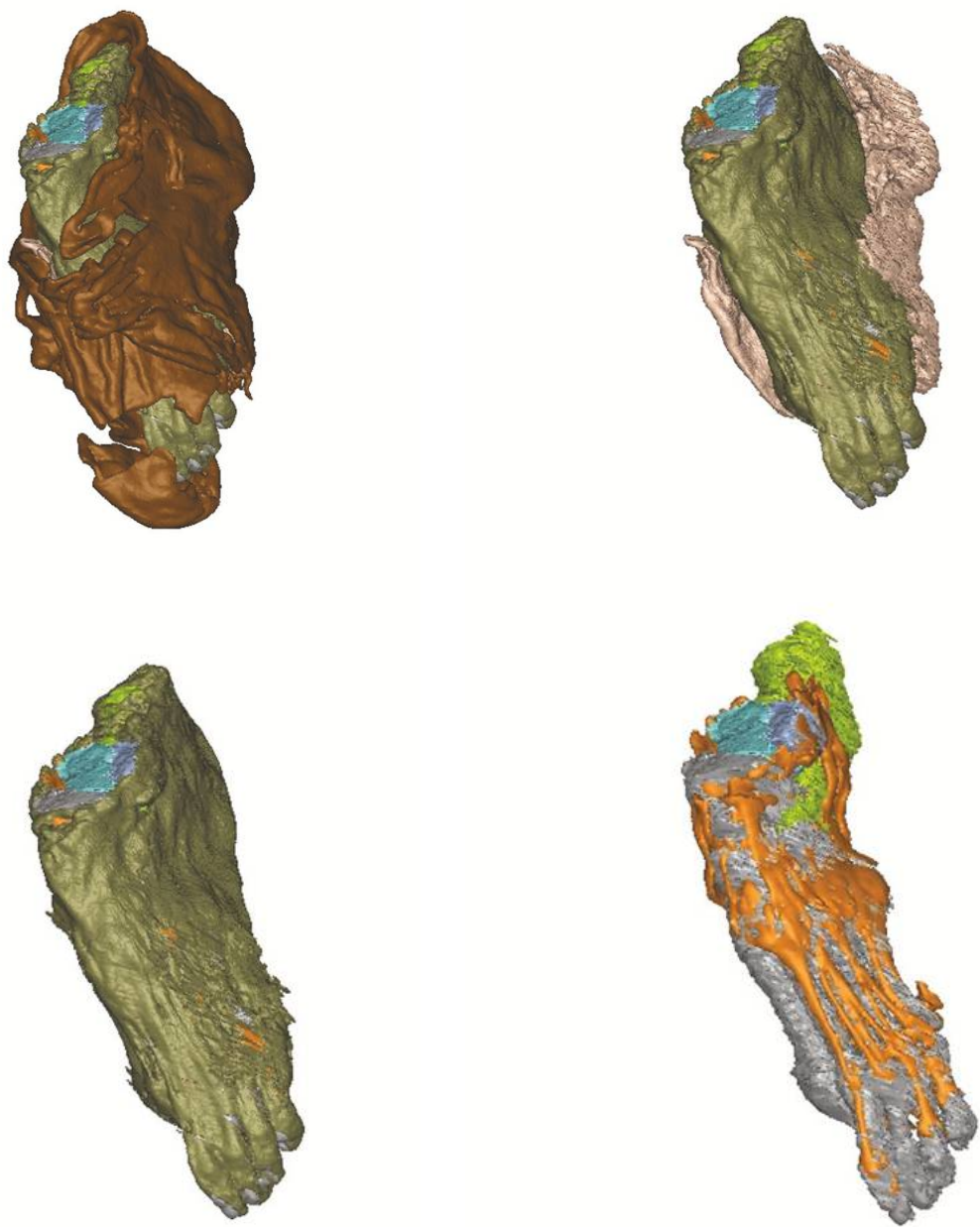


Fig. 3a-d 3D visualizations based on the CT-scanning of the Fræer foot and shoe. 3a: the shoe with the foot inside; 3b: foot skin surface; 3c: ligaments and bones of foot; 3d: foot bones.

Table 3: Calcaneus measurements of the Fræer foot compared to modern averages (from 1: Zakaria et al. 2010; 2: DiMichele and Spradley 2012; 3: Gualdi-Russo 2007). The last column represents recalculated values for the Fræer calcaneus given 5-10% shrinkage.

	male averages (mm)	female averages (mm)	Sectioning values (mm)	Fræer (mm)	Fræer (5-10%) (mm)
Length	84.3 ¹ 87.8 ² 81.5 ³	73.7 ¹ 79.8 ² 73.5 ³	79.01 ¹ 83.80 ²	77.0	81.1 – 85.5
Height	47.9 ¹ 43.0 ³	41.4 ¹ 38.3 ³	44.67 ¹	40.9	43.1 – 45.4

Conclusion

Although the workers who dug out the Fræer body did mention that they thought it was a woman, no notes describe why they thought so – whether it was due to the body, the hair or the dress. It is therefore difficult to assess how valid this information is. On the other hand, no definite sex determination is reached when applying modern anthropometric formulae for bone (calcaneus) size. This is probably due to shrinkage and some warping of the Fræer foot as it dried out after it was found, and inadequacy of the comparative size formulae, which are all developed from modern populations. We do note, though, that the maximum length of the foot is very close to the foot lengths of the Grauballe Man and the Tollund Man. Still, whether male or female, the age at death of the Fræer individual is comparable to the other Danish bog body finds: individuals around 30 years of age when they were placed in the bogs (Lynnerup et al. 2007, 2008; Fischer 2012).

Neither can shoe nor textile add any further gender conclusive characteristics to the forensic analysis. Based on the quite large and varied collections of skin and textile costumes dated to the Late Bronze and Early Iron Ages, it has been concluded that the Pre-Roman Iron Age dress in particular was influenced by a unisex concept, which seems to be much stronger than in the previous and subsequent periods (Mannering et al. 2012). Most costumes types, like the rectangular textile wrap-around garments, were used by both men and women. For instance, the same type of capes occurs together with both male and female bog bodies, and shoes are of similar design for men, women and children.

We hope that we here have demonstrated how an old find, subjected to modern analysis and deep scrutiny, can provide new and unforeseen information about prehistoric life and technology. First and foremost, the Fræer find appeals to us today because through it we are able to come very close a prehistoric individual. In the nineteenth century when the Fræer burial was found, human remains alone were not considered archaeological artefacts worth preserving or studying. It is thanks to persistent laymen that many of these finds found their way to the Danish museum collections, but even so the human remains often suffered an undeserving fate locked away in museum basements (Mannering 2010: 15-16). In most cases human remains and skin/textile costumes were separated upon arrival to the museum, but in this special case the finds were kept together, and in this case it is likely that it was the shoe that saved the foot from final destruction. That we are now able to tell a renewed and much more detailed story about the Fræer find is thus thanks to a long sequence of accidental – but fortunate – circumstances of which life is so full.

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SYMBOLS OF IDENTITY: A PHENOMENON FROM THE MIGRATION PERIOD BASED ON AN EXAMPLE FROM FINNESTORP

Bengt Nordqvist

Abstract: The study of Finnestorp, a war-booty site, is an ongoing research project. Several different kinds of ritual activity are represented at the site, in particular the offering ceremony preserved in the wetlands as well as ritual activities which took place around it. The items found represent the high status equipment belonging to elite warriors who were mounted on horseback.

These exclusive, often gilded, weapons and horse equipment are extremely fragmented, but at the same time they are very well preserved. The artefacts are richly ornamented with both abstract and zoomorphic figures. A whole world of symbols is presented within these small artefacts. This paper will examine the interrelationship of the figures and consider how they should be interpreted in relation to the religious disputes of the period in which they were created.

Keywords: War-booty, offering site, Migration Period, mounted warriors, warlords, Odin, divine leadership, Christianity, Norse religion, animal style, symbols, identity

Introduction

In this article I will consider one aspect of the find material from the Migration Period. The discussion will focus on artefacts from the war-booty site of Finnestorp. It will begin with a short presentation of the site and a general overview of what these finds represent. These metal objects will then be discussed in a broad sense, before turning to more specific historical, sociopolitical, religious and ideological aspects.

Background and a brief overview

In terms of geography, war-booty sites have been discovered in Denmark, southern Sweden and northern Germany, but none is known from Norway or Finland. Chronologically there are some noteworthy differences in that the Danish and northern German sites mainly date to the Roman Iron Age, and only a smaller proportion are from the Germanic Iron Age/Migration Period. In Sweden the opposite is true (Ørnes & Ilkjær 1993:216).

There are also differences concerning the kinds of finds on the war-booty sites. In Sweden horse equipment occurs most frequently, particularly on the sites of Vännebo and Finnestorp (Nordqvist 2008). In Denmark and northern Germany it is more typical to find equipment from the 'ordinary foot soldier', and one rarely finds that of the more affluent or higher ranking officers. At Finnestorp the opposite is true, and there is no weaponry or equipment which could definitely be connected to ordinary warriors.

At the war-booty sites in Denmark and northern Germany items are typically found as complete tools. For example, there are complete swords, with blades and all parts of the grip intact. In Sweden the swords tend to have been deliberately broken down into pieces. The individual pieces were turned into single mounts. For example, the sword pommels and the mounts were ripped off of the grip as well as from the blade. Also typical for Finnestorp is the fact that each single mount for a saddle or sword was chopped into even smaller pieces, so the sword pommels are often divided into two pieces (Ilkjær 2003:44, 2008:19; Nordqvist 2008:221, 2009b)

Research into war-booty sites in Denmark has been continuous for over 150 years, starting with the fantastic work of Conrad Engelhardt. Many more sites of this kind have been found since Engelhardt's day (see Fig. 1). In Denmark and northern Germany the best known sites are Thorsberg, Nydam, Vimose, Ejsbøl and Illerup (see for example Brønsted 1966:208; Ilkjær 2003:44; Ørnes & Ilkjær 1993:215), where the research tradition has been ongoing and has taken place on a grand scale in the twentieth century. In the 1970s-1990s major excavations took place in Esbjøl, Nydam and Illerup (Ilkjær 2003:44, 2008:19).

In general there are only a few war-booty sites known in Sweden and they are all situated in the south: Skedemosse, Vännebo and Finnestorp (see for example Hagberg 1967a; 1978; Stenberger 1979:427; Burenhult 1999:283; Mülle-Wille 1999:60, Nordqvist 2008). The research tradition in Sweden goes back to 1970s, when Ulf-Erik Hagberg was working at Skedemosse. Little has been done since then. The Swedish excavations have always been of a much smaller scale than the Danish. As a result, we know much less about the Swedish counterparts.

The discussion regarding how these spectacular archaeological remains should be interpreted began when Engelhardt presented the bog finds for the first time, and it has continued ever since. Still dominating is Worsaae's thesis, which postulates that weapons were deposited according to particular customs which dictated that after a battle the victors must sacrifice part of the booty by sinking it in a sacred lake, or bog (see for example Ilkjær 2003:44; Lund Hansen 2003:85).

More recent research has found that these Iron Age and Migration Period bog finds resulted from wars and battles in which the intention was to take control of the land. They have also been interpreted as remains of larger scale Scandinavian interregional conflicts with the purpose of conquering extensive regions. These power struggles can be seen as precursors to the warlike encounters of the Viking Age and Middle Ages (Ilkjær 2003:64). Recent research into these bog finds has provided contributions concerning connections to historical contexts as well as the high ranking warriors from the Migration Period. Jensen, as well as



Fig. 1 Map of major war booty sites from south Scandinavia. From Ilkjær 2008:10; Graphics: Louise Hilmar.

Lau and Rau, present a more detailed hypothesis about the origin of the fallen warriors as well as models that are more complex than the earlier examples presented by Ilkjær (Pauli Jensen 2008; Lau 2008; Rau 2008). They also put the artefacts into historical contexts such as the Markomanner wars (AD 166-180), and in this way connect them to specific tribe names like the Lombards.

The war-booty site of Finnestorp – a short presentation

The war-booty site of Finnestorp was discovered in 1902 during the construction of a small road (Nordqvist 2006:6ff). During the work, sand and gravel was brought up from the nearby surrounding wetland. While working they found a lot of different artefacts, such as bone remains as well as different parts from swords, like blades of iron, as well as various mounts made of silver and bronze, all belonging to swords and scabbards. There were also mounts for horse equipment, as well as bridles, all made of iron, bronze and silver. The most exclusive find was a finger ring made of gold. In total about 100 objects (excluding bones) were found. Subsequently, only very small excavations were undertaken in 1904, 1980 and in 1992 (by archaeologists). These excavations more or less constituted illegal fieldwork. A small number of items (about 50 objects) were found during these sporadic and

limited ‘archaeological visits’. The conclusion was that Finnestorp belonged to a special category of archaeological site – a war-booty site dating from Late Antiquity to early Medieval times (Migration Period in Swedish terms). Finnestorp is now regarded as part of the exclusive group of war-booty sites in Scandinavia-North Germany dating to the Roman Iron Age – Migration Period (c. AD 100-550).

Results from the research project

These early archaeological excavations did not result in further archaeological investigations until the year 2000, when the Finnestorp project started. It continued until 2004 and was a small-scale field project of ten weeks. It began again in 2008 and is now an ongoing project, although here I will only summarize the excavation results from 2000-2004. These excavations produced very interesting results (Nordqvist 2006, 2007, 2008, 2009a, 2009b, 2010). Our field research has been conducted in two different categories. First, we used metal detectors, which made it possible to detect the surface finds. By using this method we obtained a large-scale overview of the area through the finds in the upper part of the soil. After this survey it was possible for us to conclude that the wetland was about 400 m x 100 m (north-south

by west-east). To the north-south the survey resulted in a small quantity of objects over all. All together the results indicate an offering site on a vast scale. By excavating the find layer in three different minor areas (in all 85 m²) within the offering site, it was also possible to observe that there are also remains from other ritual activities within, and probably even around, the offering site.

These dry land activities were represented by fireplaces, which contained silver drops and burnt bones from oat/goat. Bones from this group of animal species, as well as the silver drops, were phenomena found only in connection with fireplaces. These features have been ¹⁴C- dated to the same time period as the war-booty remains (approximately AD 350-550). Skeleton remains belonging to humans, pigs, several horses as well from a wooden part of saddle produced comparable dates (Nordqvist 2009b:15). There are two datings which are older: human bones from AD 20-400. These bones are believed to be the remains from human sacrifice.

Looking at the offering area from a north-south perspective of, including the results from surface prospecting as well as from the excavated areas, it is obvious that the best conditions for preservation are situated in the *northern part* of the wetland. In this area find categories such as bone and wood, as well as silver and bronze, are all very well preserved. Without exception, iron objects are badly preserved all over the wetland area. In the *middle part* of the wetland, there was a small hill which was like an island, surrounded by wetland. This is where the fireplaces were located. In this area the preservation conditions were about the same as in the northern part, except that the only surviving skeleton remains were teeth from horses. Further *south* there were mainly items made of silver and bronze. Here only two iron objects were found, and there were no skeleton remains.

Mounted warriors

What do these remains represent? First, the find-spot represents an offering activity which had been going on for several hundred years (Nordqvist 2009b:15). Ten ¹⁴C- datings were obtained from a range of material, providing a time-interval of AD 20-600 (2 sigma). But the custom of war-booty offerings only took place at Finnestorp for about 200 years, approximately AD 350-550.

The items found correspond to the equipment for the highest ranked warrior from the time period (see Fig. 2). They also represented a special category of warrior: those who fought while mounted on horseback. These horseman were familiar with the lance, spear, sword, axe, battle knife, shield and probably also with the bow and arrow. The warrior seems to have been a 'cosmopolitan person' belonging to the most elite level of society at this time.

Similar finds

The metal objects seem to belong to exclusive swords and horse equipment, and the mounts are mostly made of bronze. Many objects are of gilded silver and sometimes bronze. These metal objects are decorated with elegant ornamentation. Some have their parallel in Late Antiquity/Byzantine abstract ornaments (stars, triangular, rosettes, acanthus, interlace, etc. Åberg 1918:36, 1945: 251, 1948:36; Haseloff 1981:8). Other objects are of more typical Germanic type with zoomorphic /sculptural presentations (bird, horse, beast, mask etc.). They are all rare finds in Scandinavia. The finds which are most similar are from the war-booty sites of Denmark and the northernmost part of Germany, as well as

exclusive and rare finds from graves. There are also parallels to these objects, which are scattered across most of Europe. They are often presented as '*Fürstengräber*'. These finds are to be found for example in the southern part of Scandinavia, Ukraine, Poland, Baltic, Austria, Germany, former Yugoslavia, Italy, northern Spain and in the south-eastern part of England (see for example Abegg-Wigg & Rau eds. 2008; Anker 1998; Menghin 1983).

But these artefacts are not just archaeological finds; they seem also to have a deeper meaning. To understand all of the objects it is important to go a step further and analyse their ornamentation, attempting to interpret their symbolic meaning.

'Shadows from the past' - ornaments as symbols

Germanic animal art was not purely decorative. It would have been executed and presented with a specific purpose in mind, or with an intended meaning. This could be of religious character or perhaps to be used as political propaganda, and it might also embrace mythical images to help the collective memory and history in a non-literate society (Olsen 1989:435). A general feature is that the animals are more abstract than realistic, and are rarely of any identifiable species etc. (Nielsen 1998:2). This can be interpreted as animal symbolism and the characteristic features had become iconic (Hicks 1993:6; Taylor 1987:118). The symbols used must have been understood within the community as well between different societies or they would have had no meaning or purpose. Sometimes they involve mythical symbols such as Odin's raven, Fenris wolf and so forth (Hicks 1993:8). But the symbolism also goes one step further and often depicts quadrupeds and other non-identifiable animals which so far have not been linked to any mythological tradition (Nielsen 1998:3).

The formation and unification of kingdoms is a prominent theme in the Migration Period, when struggles for power were a common occurrence. Art was an effective medium for communication in this type of power struggle, and during such a process it became a method for disseminating propaganda and legitimizing authority. Thus, in this period art became important as an element in ideological communication (Nielsen 1998:4).

From an archaeological perspective this process of unification which is seen in the territories of southern Scandinavia coincides chronologically with the final part of the great war-booty offerings in the wetlands (Ilkjær 2003:61; Näsman 2006:220; Ørnæs & Ilkjær 1993:218). In parallel to this there are legends that survive from this period which tell us about kingdoms that repeatedly clashed with other tribes and had stories about heroic warriors as a main theme (Nielsen 1998:4-5; Jørgensen & Pedersen 1998, Lamm 1994; Newton 1993; Rausing 1985).

The primary use of the animal style was on weaponry and horse gear which indicates that it has a specific function in society, and in this case it should be associated with the elite. The uniformity of the decoration was controlled and as such it was unmistakably identified with the giver; at the same time it had a function as explicit propaganda for the warlord (Nielsen 1998:9).

The stories of the tribe, through beliefs in myths and rituals, became the unifying tradition for a common identity (Hedeager 1997:29). The animal style was not just a form of decoration but an important element in the upbringing and the justification of the life of the elite. It may have been based on a memory of divine origin, as in Scandinavia, and it appears to be associated with Odin. (Magnus 1995; Nielsen 1998:40). The rights or legitimacy

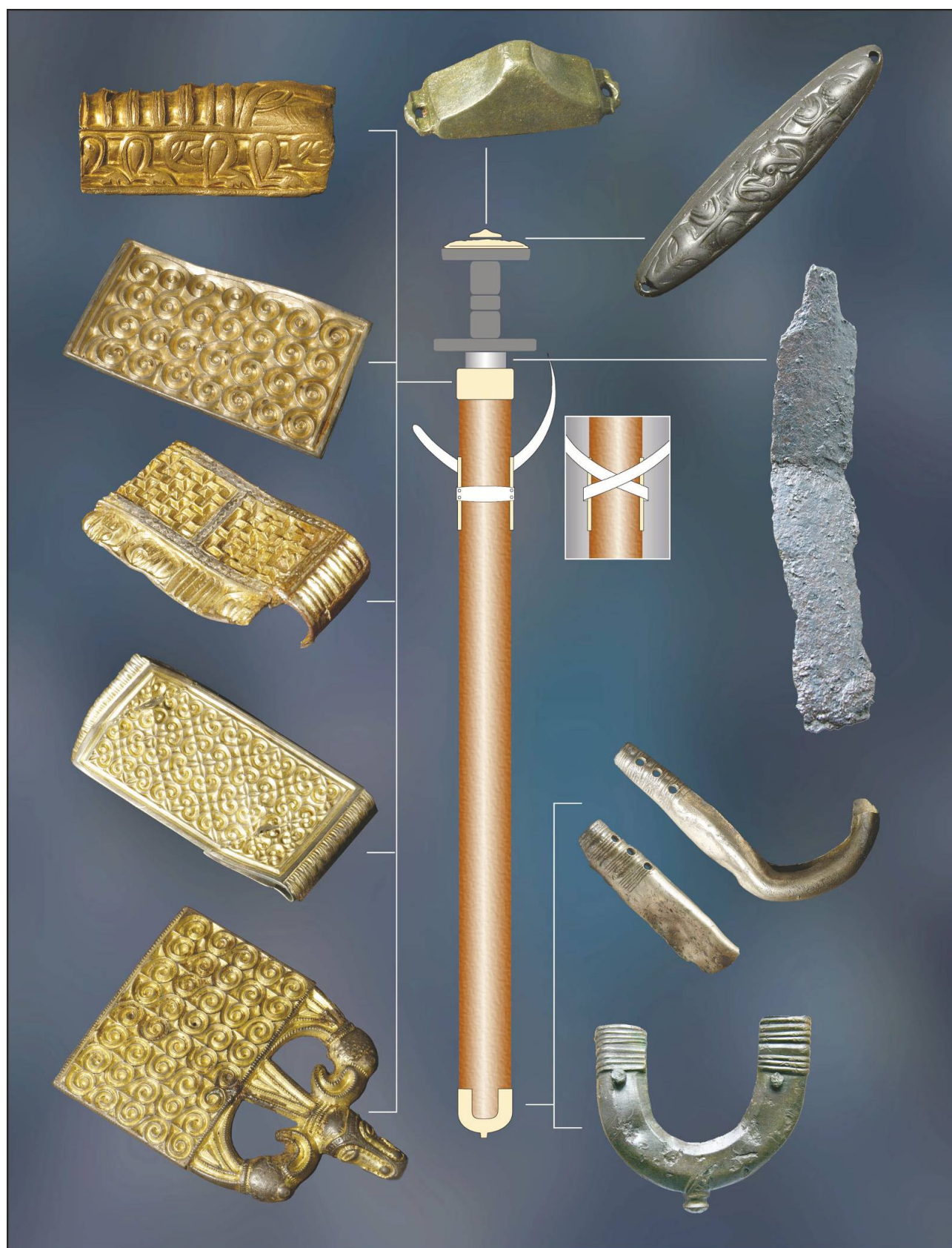


Fig. 2 Examples of finds from the war-booty site of Finnestorp (mountings for a sword and scabbard). Photo: Projekt Finnestorp.

of the king to his kingdom were also legitimized through a genealogy which often goes back to one of the gods, such as Odin. Through the genealogy, kings could claim their right to the territory as well as to the nation. With a created myth of origins the symbolism could be associated with this myth (Dumville 1997; Nielsen 1998:36; Wolfram, 1994). This tradition of divine origin can even be traced among the Lombards in Italy. Here the king of the Lombards had the title 'ex genere Gungnis' – 'by the lineage of Odin' (Hedeager 1997:29) (my translation).

The formation process concerning the symbols used by the tribes near the Franks is important for understanding the utilization of the animal symbols at this time. The use of Animal Style II in the border area of the Frankish kingdom can be seen as an expression of Germanic identity with the purpose of opposing the Romanized and Christian Frankish 'identity', making an important visual impact because the animal style was not used within the Frankish kingdom (Greene 1987:125; Nielsen 1998:22; Marti 1994:31). In the Frankish kingdom the established style was the polychrome style with red and gold, which played a special part in the Christian cult (Arrhenius 1985:196; Nielsen 1998:37). The Lombards in Italy expressed their Germanic and non-Christian identity in the same way during their struggle with the Christian power represented by the Byzantine Empire (Åberg 1948:36; Hedeager 1997:29).

It is assumed that genealogies, as well as origin myths, have also worked as powerful propaganda (Dumville 1997:83; Nielsen 1998:37). An origin myth is the evidence of an inherited past which gives a group its common identity as well the 'ideological tools' to understand and accept radical changes in culture. During this time period the general tribal myths are only known from people who have a myth of Scandinavian origin (Wolfram 1994:34). The Scandinavian origin myths appear mostly in groups which are generally connected with the former Elbe Germanic area, and most of them used Style I (Nielsen 1998:40). Origin myths which are rooted in Scandinavia are found amongst the Goths, the Lombards, the Burgundians, the Heruli, the Angles, the Saxons, the Jutes and the Vandals. Style I is known in the same area, although it also existed amongst the Saxons in England and the Thuringians. But only the Lombards, the Burgundians, the Jutes and the Angles also used Animal Style II in their decoration. (Nielsen 1998:37). Alongside ethnic tradition, the origin myths and their genealogy legitimized kingship and imbued it with a divine leadership (Wolfram 1994:35; Nielsen 1998:38).

While in southern Scandinavia Style II seems to have been linked to kingdom formation as a legitimizing style, on the continent it appears to be distinctly linked to the opposition of Romanization or to the Roman influences as well as Christianity represented by the Frankish kingdom and the Byzantine Empire (Nielsen 1998:36). This could be the phenomena behind the use of Style II in the south-eastern border area of the Frankish kingdom as well as in the Lombard regions of Italy. Here it was possible to visualize a clear marking of Germanic identity in contrast to the Romanized Christian 'identity'. In the conquered regions, situated within the south-eastern border of the Frankish kingdom, the Style II animals survive on women's brooches as an identity marker while the men were obliged to adopt the 'uniform' that was prescribed by the Frankish leadership (Greene 1987:125; Marti 1994:31). In the Thuringian kingdom there are objects with Style I ornamentation, but not with Style II. Their kingdom was incorporated within the Frankish realm in 532 and that could be the reason why Style II never occurs within the Thuringian territory (Nielsen 1998:40). In the same period we see the same phenomenon with runes and the

runic inscriptions. They seem to have originated in, and appear to be a deliberate contrast to, the dominant Roman writing culture (Stoklund 2003:178).

The war equipment and metal mounts from Finnestorp

The items found at Finnestorp comprise equipment for warriors and their horses. The find categories that are richest in ornamentation, bearing many different symbols, are swords and scabbards as well as saddles and bridles.

The bridles are decorated with various metal mounts. These objects are ornamented with punched decoration (Sösdala style) as well with geometric chip carving/relief decoration (Sjörup/Nydam style). There are also a few examples of zoomorphic side bars that have been placed directly on the mouth bite. The side bar motifs seem to be bird heads executed in Style I. The saddle mounts have been placed on the bow and they consist of rail, mounting and saddle ring. The rails and saddle rings are decorated with white metal encrustations (for example a circle with punctures and bars). The saddle mounts were placed on the lower part of the bow. These mounts often have zoomorphic figures of unclear animal character, but they seem to represent horses as well as the beast.

The other group of artefacts is associated with the sword, scabbard, ferrule, edge mounts for attaching the baldric (the sword belt) and the belt buckle for the baldric. The most highly decorated part of the scabbard was the mouthpiece. All were made with geometric chip carving (Sjörup/Nydam style) or else had a plain surface. Some of the mouthpieces with chip carving have geometric patterns of acanthus and others have zoomorphic figures like birds and a horse or with a beast. One even has three human masks. All objects are made in Style I. The sword hilts often have ornamentation on the sword pommel. These were made in geometric as well zoomorphic (Style I) chip carving technique. There are also some fragments of metal mounts from the upper and lower parts of the hilt. These seem only to be ornamented with punched decoration (Sösdala style). The belt buckles have punched ornamentation as well as geometric chip carving/relief decoration.

One of the belt buckles is more sculptural in character. This one will be considered below. However, before the buckle is analysed it is helpful to know a bit more about Old Norse sagas and Odin himself.

Odin becomes visible - a major shift in ornamentation style

The Roman style dominates in south Scandinavia until about AD 400, but in the century AD 400-500 a new style emerged: the animal style. To begin with, it was inspired by Roman art. There are different examples of ornamentation such as acanthus, Roman two bands fletch, meander, 'running dog', half circle, star, triangle etc. Albeit inspired by Roman art, it had its own Germanic character. These ornaments are often found in combination with other decorative techniques such as niello, and they are often gilded. The evidence together demonstrates that the objects were made within the Roman Empire and were brought to southern Scandinavia through importation or as war booty (Haseloff 1981:16).

This period witnessed a shift, right across the European continent, from Roman domination to the benefit of the Germanic warlords. At the same time there were several different religions coexisting. For example, there was the Christian church (directed from

Byzantium), the Arian church (dominated by the Goths) and the non Christians - the barbarian tribes. And at this time we now see, for the first time, indications that a new religion was emerging, the myth of the god Odin, and probably the beginning of the Norse religion. The symbols of Odin became visible for the first time on portable art (Magnus 1995; Nielsen 1998:40; Pedersen 2003:288).

The symbol of Odin appears

In south Scandinavia there is find material with ornamentation which could be connected to the symbols of Odin (like two birds, a horse and sometimes even the god himself) and these symbols appear, for example, on bracteates, weapons and relief brooches.

In the find material from Finnestorp we can see (as outlined above) the combination with Odin's horse together with his pair of ravens and sometimes even Odin himself. These symbols appear on several finds, such as on a horse bit (with a zoomorphic sidebar of a bird), a mouthpiece of a scabbard, a belt buckle etc. (see Figs. 3 & 4).

Sometimes this symbolism is very subtle and one good example of this is a horse bit from Finnestorp. Here we found an extreme combination of zoomorphic sidebars on the bit for the warrior's horse. These sidebars were made in the form of birds and positioned on both sides of the mouth of the horse. The same symbols with the same position (a horse in the middle and two birds/ravens/eagles, on the sides) are also commonly visible on the women's relief brooches found in graves.

The question to follow is: how should we interpret this mounted warrior? Who would have owned a horse bit with zoomorphic sidebars with the symbolic motifs of birds? The combination of sidebars (with bird motifs) and the battle horse 'in between' could be interpreted as having a special symbolic meaning. Could it be that the mounted warrior himself wanted to be seen as the man who represented Odin? He was not just a king, but seems also to be related to Odin. Through the horse bit he presents himself as the 'god given king'. It has the same meaning (but in a Germanic version) as one of the mosaics from a church chapel in Ravenna from AD 500. Here Jesus is dressed and presented in the same way that a late Roman emperor would have been treated. Here the message is that God and the ruler are one and the same – this is Christ, the king of heaven, the emperor of earth (Hedeager 1997:102).

Other objects describe myths of Odin in an artistic way. One of the belt buckles could be interpreted in this way and is a buckle of 'royal status'.

A belt buckle of 'royal status'

From the Migration Period there are several magnificent artistic objects of note, and one category comprises the richly ornamented gold items of heavy rings, as well spectacular collars. It seems that the myths and holy tales together with these richly ornamented objects were part of a cosmic order and in that sense formed a link between humans and the other world (Hedeager 1997:99).

To understand the belt buckle we have to realize that style represents ideas and material culture is a way to create order in the chaotic world (Hedeager 1997:82). Style elements are chosen with respect and care and they are specific and culturally bound because they contain important messages relating to social relations, group belonging, myths and ethnicity (Hedeager 1997:83). Styles then

became important when rulers wished to assert their legitimacy. The art style from the Migration Period thus becomes highly symbolic, something beyond aesthetic, because the ornamentation contains messages communicated using the language of the gods (Hedeager 1997:83). The animal style had this significant and meaningful function for the Nordic peoples as well for the continental Germanic groups.

With this knowledge established, we can turn to the belt buckle in question (see Fig. 4), which is one of the most spectacular finds from Finnestorp. It is a buckle bearing many zoomorphic symbols, and the object is almost three-dimensional. It was inspired by the late Roman officer's counterpart, and belongs to an exclusive group of buckles, examples of which have been found in Denmark, Norway, Lithuania, Austria, Ukraine and Italy (Nordqvist 2010:95).

There are symbols on both ends of the needle. On one end of the buckle there is the shape of a horse leg that ends with the hoof, and on the other end there is the face of a male. In spite of the small scale (small as a fingernail) the face contains many minute details. There is also a round part of the buckle, which has a plain surface with four birds. Between the birds there is a small stick. This stick ends on the top, with a hemisphere. On the sides of the round part of the buckle there are triangular decorations similar to the motifs found on the upper part of Theoderic's grave mausoleum in Ravenna, Italy (Nordqvist 2010:96). The buckle also has a loop that is ornamented with beasts.

The analysis of the buckle could end here, but there is more to say concerning the symbols (Nordqvist 2010:97). Indeed, these may be compared with one of the Old Norse sagas (see also Hedeager 1997; Pedersen 2003). Of course there are significant problems and source criticisms connected with this type of analysis, but conscious of these problems I will pursue my discussion. As Hedeager (1997:13) writes, 'it is not our historic reality that has to be confirmed; it is the opposite, it is their reality which has to be exposed by the remains of their written sources expressed, for example, by the Norse sagas'.

The archaeological object confronts an Old Norse saga

So, if we can accept that these symbols could be connected with the old sagas, this analysis can be taken a few steps further (see also Pedersen 2003:288). My interpretation is that the motifs of the buckle (described above) are connected to the Norse god, Odin.

Returning to the buckle, we can see a male face, a leg of a horse, four birds and two beasts. All are symbols which could be connected with Odin himself, his horse Sleipnir, his ravens Huginn and Muninn and maybe his former murderer, the wolf Fenrir.

My hypothesis is that the buckle is connected 'to hidden messages or stories'. So, this is the question: can we unlock the hidden story? This possibility is very unlikely because it is unusual that the visual arts from the Migration Period tell a story (Pedersen 2003:294).

First, we have four birds, but we know that Odin had only two ravens. How should this be understood? If we can accept that the jeweler had a special intention in presenting four, not two, birds the object becomes an interesting story. Could it be that the jeweler wanted us to understand that the double couple of birds express a 'mirror-effect' of the buckle? If so, this effect could be intended to tell us that the birds were positioned in front of a round water



Fig. 3 Examples of symbols of Odin – a mouthpiece of a scabbard and a horse-bit (with a zoomorphic sidebar of a bird). Photo: Projekt Finnestorp.



Fig. 4a (left): general view of the belt buckle with details such as Odin's face, the hoof and Mimir's well (photo: Projekt Finnestorp); 4b (right): Odin looking into the well, with the stick with the hemisphere in the foreground. Photo: Bengt Nordqvist.

surface. Could it be that Odin and his ravens are looking down into a well? If we can accept this, it transports us to a special incident located at Mimir's well, and it is here that one of the most important events in the life of Odin takes place (see also Hedeager 1997:129; Pedersen 2003:290).

Now the small stick with the hemisphere plays an important symbolic part in the story (see Fig. 4). Because Odin's face is positioned towards the hemisphere, it seems as if it might symbolize the eye of Odin. Combining all of the elements, it appears that this is the episode in which Odin gave his eye as an offering gift to Mimir's well.

It appears that our warlord would like to be connected with the god-blessed warriors of Odin.

What we see here is a story that has survived 1,500 years. The story was written down in medieval Iceland, and thanks to this saga it is possible to provide one explanation for interpreting this exclusive belt buckle.

So from this 'deep diving analysis' concerning one object from Finnestorp we also have to be aware that he himself, bearer of the buckle, was a participant in the historical events from the Migration Period. He was actually one of the individuals making history.

The rise of Germanic warlords in Europe

This article has examined some of the contradictions between symbols inspired by Classical art associated with Christianity. These symbols have been viewed in opposition to Germanic art which has been associated with the Norse pagan religion in general, and specifically with the god Odin.

This new religious influence appears at a time when power shifted to the benefit of the Germanic warlords on European ground. It was a time when the Germanic warlords dominated the process concerning the spread and development of new powers. Their new power is manifested with symbols on their weapons and war equipment. They started wars with the intention of obtaining dominance over land, people and gold. Ongoing alliances were made with elite warriors who repeatedly started wars, and all were players looking to dominate. Christian or non Christian? Friend, enemy or opponent? These were the vital questions in the great halls or on the battlefields. Part of the battle played out within the world of symbols, which would have identified an individual as a friend or an enemy. These ornaments suddenly became symbols of one's own identity.

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Finnestorps homepage: <http://www.finnestorp.se/Default.aspx>

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ROCK ART

DEER, GOATS, SUNS, FACES AND GEOMETRIC DESIGNS: SYMBOLS OF POWER IN PREHISTORIC POTTERY FROM ATLANTIC EUROPE

M. Pilar Prieto Martínez

Abstract: Geometric motifs predominate in western European pottery from the third and second millennia BC. Usually, due to the difficulties inherent in their interpretation, little attention has been paid to these motifs in iconographic studies in Archaeology, and as a result they have been dealt with as a descriptive element, in some cases as a key factor for establishing a typo-chronological classification. In contrast, figurative motifs, which have been studied in great detail, mainly appear in rock art. However, in rare cases figurative motifs (such as deer, suns, goats and faces) are also found on pottery, which are always associated with geometric motifs.

This study defines the iconographic structure of this pottery, focusing on these figurative elements, but without overlooking the role of the geometric motif. The aim is to situate this iconography within a wider context (seeking out the different material expressions with decoration) in order to interpret these specific types of decoration. I believe that the use of these figurative elements on pottery is the result of a pan-European strategy of power, and for this reason I will mainly focus on the Bell Beaker society for the purposes of this study.

Keywords: Bell beaker, iconography, decoration, pottery, stele, rock art, cosmos, tri-functionality, pan-European

Introduction

Bell beaker communities (2600-1600 BC, although there are slight variations between regions) adopted a new way of representing society, more standardized but with multiple nuances that express variability. The staging of a new iconography established the strategies of identity to be emulated on a European scale, and contributed towards reinforcing the emergence of new groups of power who controlled how the social structure functioned.

Pottery can be an element of material culture that makes it possible to define, at least partially, the characteristics of these new groups of power. It is particularly interesting to study the context of their decoration, as we will see later on in this paper.

The decoration of bell beaker pottery has usually been studied as an important aspect that makes it possible to define regional stylistic groups in a chronological order. In fact, the majority of studies on this subject have shown this to be the case (Besse 2003; Clarke 1970; Glob 1952; Harrison 1977; Lanting & van der Waals 1976; Treinen 1970a and b). On occasions, it has also been compared to the designs used on other decorated elements of material culture, observing the existence of stylistic similarities between them (Fábregas & Penedo 1994), or the change in the organization of the decorative spaces has been characterized in a general manner based on a diachronic and transcultural analysis (Prieto 1999a; Prieto et al. 2003). However, so far an analysis of bell beaker designs as a whole has not been undertaken. Such an analysis would make it possible to define a detailed formal and spatial pattern in order to discern the significance of the motifs used on the vessels, which are geometric and therefore more difficult to interpret.

Basic concepts

This study is based on four important concepts that bring a sense of coherence to the initial argument: power, identity, structural compatibility and style.

Power:

Based on M. Foucault, we understand power as a relationship of forces, a strategic situation within a given society, which as a result cannot be situated in an institution or in the State. Power, as a relationship, 'is everywhere' (Foucault 1981: 82); the subject is intermingled with relationships of power, and cannot be considered independently from them.

This concept of power allows us to understand the change that occurred in Europe in the middle of the third millennium BC. The archaeological record shows that relationships of power were oriented towards the increased divisions in society, combined with large-scale changes in the economy, organization of the territory, the family, etc.

Identity:

A change is also seen associated with the strategies of identity, corresponding with the *structural changes* that were occurring. The identity was constructed by articulating two opposing strategies: on the one hand, a homogenizing, supra-community and pan-European strategy was developed which fostered a sense of belonging, and on the other, at the opposite end of the scale, others that fostered tension and diversity (Clastres 1981). One of these was the appearance of elites, something that strengthened the development of differences in the social structure by highlighting the differences within each community. The strategies developed to construct the new identities were articulated by these new relationships of power.

Structural compatibility:

If we accept, as posited by structuralist anthropology (Lévi-Strauss 1987), that the characteristics and elements of a given society are reflected in all of the spheres of its material production, leading to the existence of relationships of compatibility between codes, then within the bell beaker territory we find the same system of

decorative codes operating in different contexts and supports which have some type of relationship and significance, and which are intimately connected with the new relationships of power that were established, as they respond to the same pattern of rationality. As a result, it makes sense to compare the designs found on different elements of material culture, and attempt to find an overall meaning for all of them.

Style:

Numerous studies have been carried out on the concept of style, in particular the publications of Conkey and Hastorf (1990) and Carr and Neitel (1995). I have produced a general definition which is referred to below, as it is the last important concept for this study. The style, considered to be the material expression of power, is relevant when it is defined by the formal, contextual and spatial relationships that are established (Prieto 1999a and 1999b; Prieto et al. 2003). Studying the style makes it possible to see how the new forms of identity are constructed: it is identified as the patterns of formal regularity that exist in codes other than material culture, and is the perfect mechanism for divulging the new ways of constructing identity. Decoration, as part of the style, must be interpreted in terms that are consistent with the cultural system as a whole, and the iconography is an ideal discursive means to transmit, convince, bring together and therefore manipulate a population that lives over such an extensive territory. Both are the 'pamphlet' of the new social order.

Aims and methodology

My aim, therefore, is to define the iconography of the communities from the third and second millennia BC in all of its different material expressions, in order to contextualize the geometric designs of bell beaker pottery. Studying these spaces of representation will allow us to access some of the strategies of power, and the development of identities, at a pan-European level.

Methodology:

In order to discover a relationship between the different ways of representation in the bell beaker area, it is necessary to define the structure, meaning the different elements that comprise the designs and their spatial organization, and to analyze how they are organized. We will base this on the vessel as a panel, as this is the main object of this study. In basic terms, the most important elements in the structure of bell beaker designs are (Prieto 1999a and 1999b; Prieto et al. 2003):

1. *Decorative motifs* comprised of a series of standardized combinations, which can be characterized as patterns.
2. The *decorative schemes* or the panel, defined by the spatial nature of the overall decoration on the vessel: the location (place and part), the organization (distribution and organization), the delimitation (definition and decorative elements used), the orientation (sequence), the composition (degree of symmetry), the visibility (degree of visibility), the variety of viewing points (assimilation of the decoration), and the sense of movement (view and movement) in order to assimilate the decoration.

'*C'est un campaniforme*' (*This is a bell beaker*). Therefore, the decoration used on a bell beaker can be defined in the following way (Prieto 1999a and 1999b; Prieto et al. 2003):

The most frequent *motifs* associated with standard bell beaker

pottery are horizontal lines and oblique lines (organized in strips of herringbones). We also see a large numbers of motifs, which are more complex and less widely used, associated with regional varieties (vertical lines, rows of dots, zigzags, triangles, grids, diamonds and different types of geometrical fills in the decoration, etc.) The way of spatially organizing the *panel* follows a quite rigid standard:

The *location* of the motifs, normally on the exterior and occupying the whole panel.

The *organization* is highly ordered with decorated horizontal strips alternating with undecorated strips, nearly always of the same width.

The *delimitation* follows the standard of using a horizontal line that defines the global design or panel on the upper and lower part of the vessel.

The *composition* of the motifs is symmetrical, and at times we see vertical symmetry, making it possible to divide the vessel into two or three well-differentiated parts.

The *visibility* of the design is highly conspicuous. The design is made to be highly visible.

There is a wide *variety of viewpoints*, as a result of which we can refer to a dynamic spatial structure in which the *sense of movement* calls for looking at the vessel obliquely from top to bottom or vice-versa in order to take in all of the design.

Iconography and symbolic discourses: strategies of power and identity

The decorative structure referred to above for bell beaker pottery is echoed in other types of materials, with the space conceived in the same way as in the decorated panels.

Examples from different parts of Europe and in different types of decorated panels have been selected in order to carry out a comparative analysis: cists, anthropomorphic steles and rock art.

Geometric representations: cists and adornment

We can find the decorative structure of bell beaker vessels simplified and transferred to the interior of the tomb in certain parts of Western Europe (from Galicia to Norway). The part of the slab which is buried is not decorated. In this case, the zigzag and mesh are the main designs, together with oblique and vertical lines, possibly making a metonymic reference to the bell beaker vessels that are not deposited in the tomb, which does however contain other grave goods typically indicative of status, such as gold adornments (at times, decorated with the same motifs as those used on bell beakers) or copper daggers (Fig. 1). A complementary and additional interpretation to the possible significance of these geometric motifs in particular could be their link with the elite, seen as a group of people who have certain privileges over the rest of the community.

The introduction of figurative motifs: rock art

In the rock art from certain parts of Atlantic Europe (Galicia or the British Isles) we see the introduction of schematic figurative motifs: weapons, especially daggers isolated in a passive position, associated with geometric motifs or organized in deposits (Santos

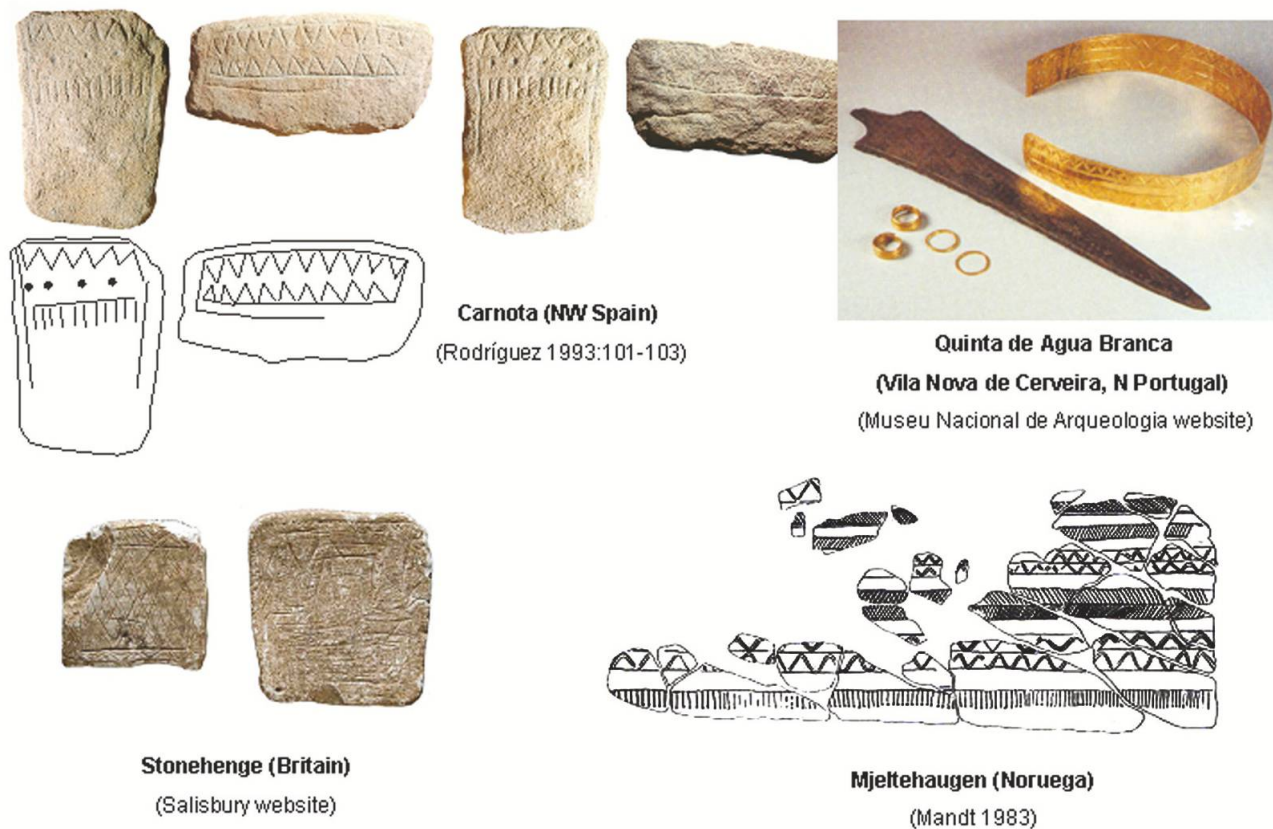


Fig. 1 Examples of 'bell beaker' decoration in tombs or on gold and silverwork.

2008). In some examples, such as in Peña Tú (Hernández & Cabré 1914), the anthropomorphic figure represented, a dressed warrior adorned with zigzags and accompanied by a dagger, is killing his enemies (Fig. 2).

When the geometric is figurative: anthropomorphic steles as bearers of new meanings

We see the most exemplary combination of geometric and figurative motifs on anthropomorphic steles. On the one hand, the greater variety and complexity of geometric elements illustrate the *identity of the warrior elite* in this society, decorating the clothing (with triangles, diamonds and mesh designs), and dividing the body into three parts. On the other, figurative motifs are introduced that indicate the *category of the warriors* with a wide range of weapons (bows and arrows, daggers, axes and halberds) in varying quantity, showing that not all warriors are equal. The type, number and variety of weapons may be an indication of the hierarchical position of the warrior shown on the stele, and the geometric designs chosen may be emphasizing this position. The iconography of steles has been studied in detail in a large number of publications, mainly by Gallay (e.g. 1995) for Sion (Valais, Switzerland); by Mezzena (1998) for Aosta, north-western Italy; and by Maillé (2010) for the south-east of France. A particularly interesting study is the summary by Harrison and Heyd (2007) for Sion-Aosta.

The steles are divided into three segments (Gallay 1995; Harrison & Heyd 2007; Maillé 2010). This segmentation is reminiscent of some bell beaker vessels (those with a more complex, less

standardized decoration), although it is more complex on the steles, and apparently easier for us to comprehend from a modern-day standpoint (Fig. 3):

On the top is the head, without a face, with a helmet and a necklace; occasionally these have a sun-like appearance, as is the case with the second carving from dolmen 1 of Petit Chasseur (Saulieu 2004: 142).

In the center is the trunk, delimited by the arms (using straight or curved lines), with a more or less complex waist, where the weapons are represented in an active position, ready to be used.

And below, the lower extremities are covered by robes, and in some cases weapons are also shown in a passive position, at times explicitly due to being sheathed or in quivers, or other important elements for the organization of these communities: wagons, animals, etc.

The identity of the warrior ethos: the body as a metaphor of the cosmos

The motifs are selected with spatial criteria, thereby intentionally using the body of the warrior to represent the ideal worldview of the bell beaker societies, considered as three functions which are opposing, complementary and inseparable (defined in detail by Dumézil, e.g. 1990a, 1990b and 1999) (Fig. 4):

Sovereignty (above): heaven/the sacred world (the sun, the head, adornments in gold or precious stones)

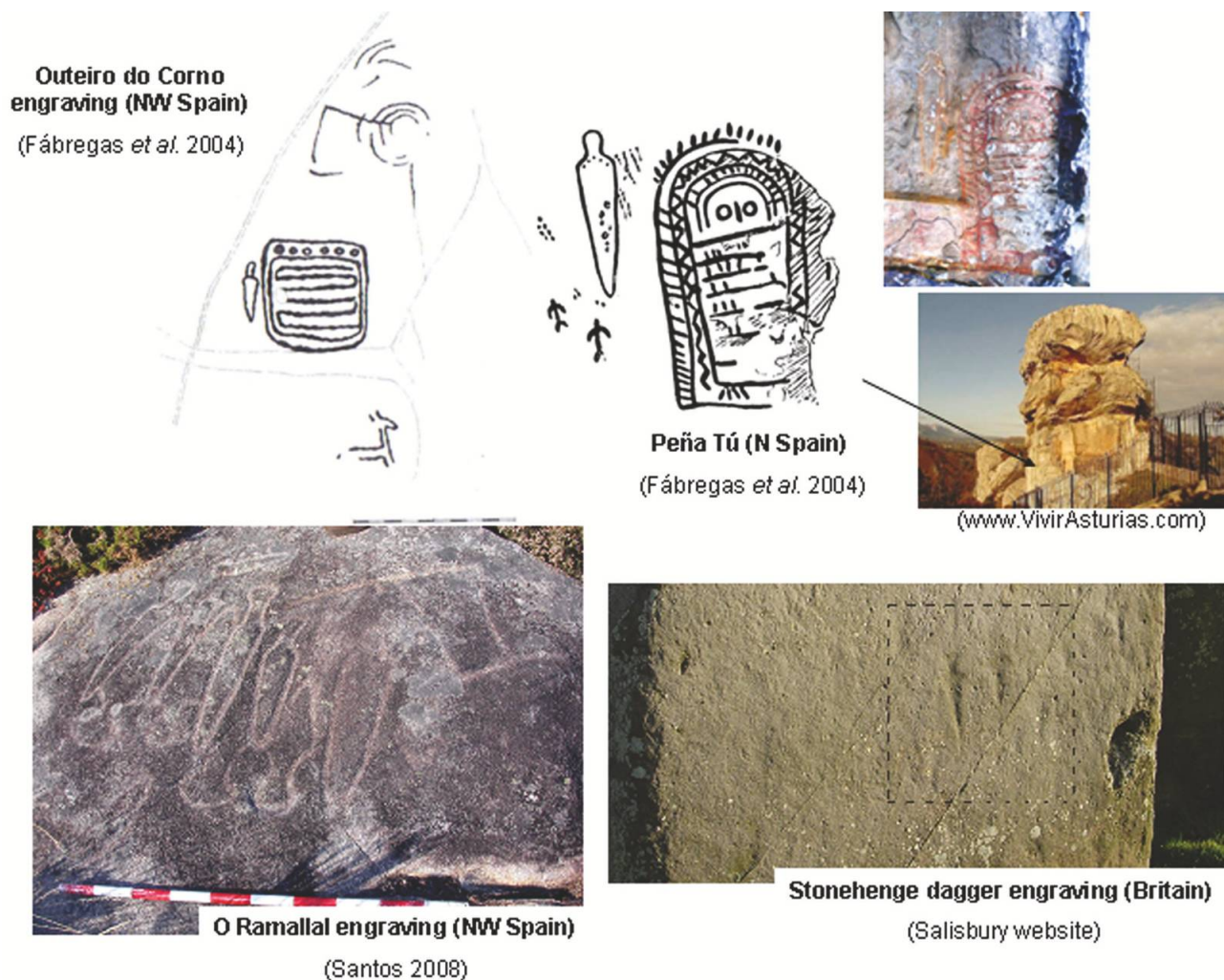


Fig. 2 Selection of carvings showing weapons.

Strength (center): earth/the profane world (the weapons in an active position)

Fecundity (below): subsoil/the subterranean world (weapons in a passive position, animals, wagons)

The warrior ethos represents the metaphor of the cosmos, and this metaphor goes beyond any frontier. This structure is also found in the steles of warriors outside of the bell beaker territory, although different details are shown: the steles have faces and hands, and emphasis is placed on the weapons, leaving aside the geometric (Mezzena 1998). It is not by chance that these steles are located in territories which control movement over long distances. The territories that meet these conditions are both coastal and from the interior of the continent: the coasts of Norway, the south of the British Isles, Brittany and the Atlantic and Cantabrian coasts of the Iberian Peninsula, the islands of Corsica and Sardinia and the Mediterranean region of France, towards the interior of the Alps, the north coast of the Black Sea, and specific points in Germany, Romania and Bulgaria (Maillé 2010:9 fig. 3; Mezzena 1998:122-125; Prieto 2011:42, fig. 4.5.2-3). This localization indicates the 'international' identity of the warrior as an elite at the same time as indicating differences between 'bell beaker folk' and foreigners, representing in some way the relationships of power of these societies. The European continent could have been controlled by the same types of elites within and outside of the 'bell beaker

territory', using similar iconographic strategies to emphasize their power within the community (as may be seen in figure 4, there are two ways of representing the warrior, although the three-part structure is maintained and the 'iconographic message' represented in each part is similar).

The deer, the goat and the sun: partial representations of the cosmos?

Continuing with the analysis of the decoration, we find an exceptional decorative repertoire in some bell beaker pottery from the Iberian Peninsula, which is referred to as symbolic decoration. To date, 28 vessels are known from both tombs and settlements. This consists of a representation of the sun and zoomorphs in procession (deer, goats or stags), sometimes combined in the same vessel. The only aspect that breaks with the decorative standard of the vessels is the representation of the figurative motif. Out of the five datings which are available, four situate this iconography between the end of the third millennium and the start of the second millennium BC (Devesa do Rei, Pico del Castro and Las Calzadillas, Camino de las Yeseras), while Palmela is the oldest, from the middle of the third millennium BC, which is perhaps consistent with the different way used to represent these deer. All of the studies carried out coincide in considering that they are vessels with a special status (Garrido & Muñoz 2000; Blasco & Baena 2003; Delibes & Guerra 2004) (Fig.5).

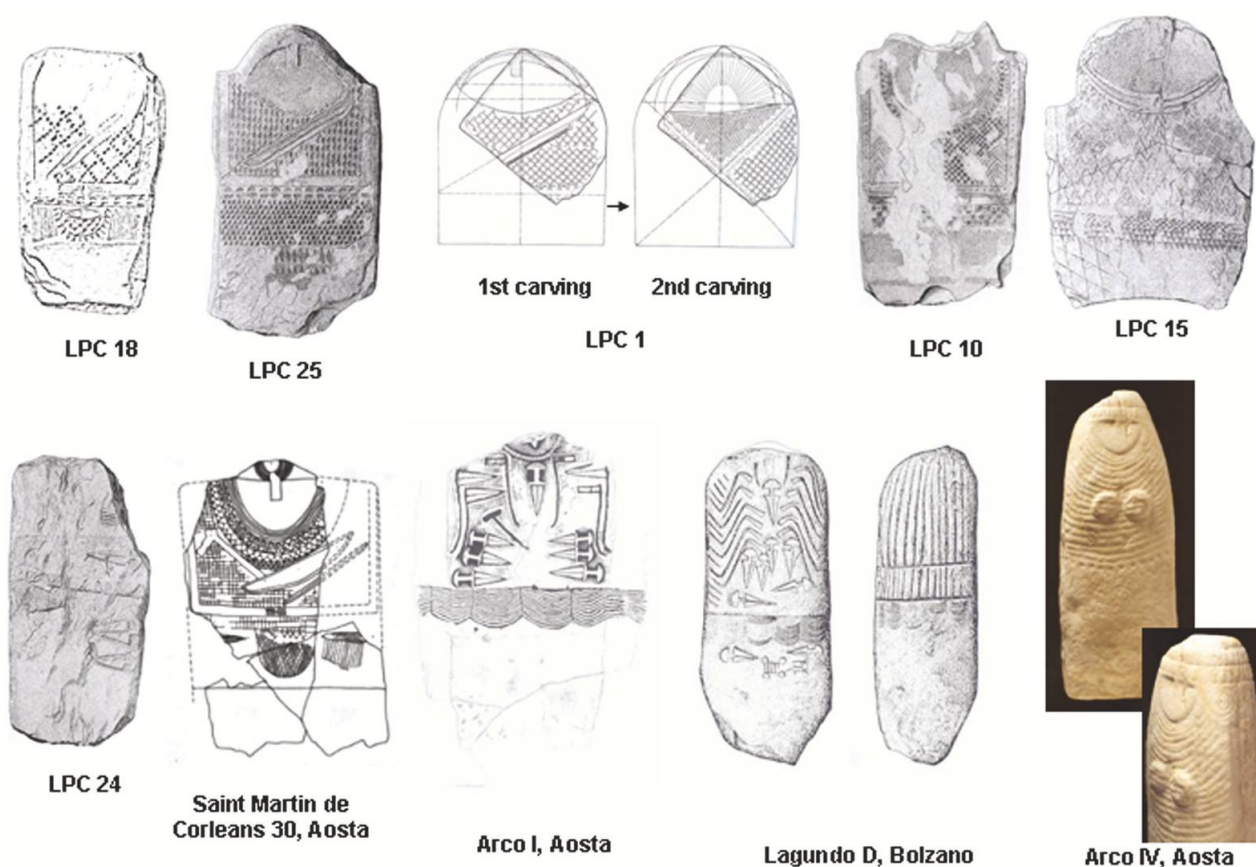


Fig. 3 Selection of a number of anthropomorphic steles.

A detailed analysis of the decoration of the pieces which have the most complete designs reveals a differential spatial distribution of the iconography: nothing seems to be the result of a random act. The zoomorphs associated with the sun are situated on the most visible parts of the vessel, in the interior of the bowls or in the upper part of the design, and in formal terms are easier to isolate as a motif, while those that are documented without the sun are 'concealed' in the middle and lower part of the vessel and on its exterior, and are delimited by zigzags. This spatial distribution could be related to the representation of a part of this cosmos, the first associated with the sovereign world in which the deer act as the psychopomps, and the second with the world of fertility. The designs of both the deer and the goats are reminiscent of Alpine styles.

The versions of the ideal cosmos: the tri-functional balance

It is important to explore a new contextual level in the iconographic analysis associated with the representation of the deer, the goat and the sun, despite the risks this involves due to the superimposition of carvings in a long chronological sequence. I will now deal with the most extensive and privileged support, rock art. I have selected two panels from Valcamonica associated with an extensive bell beaker chronology, and a stele-menhir (Saulieu 2004) (Fig. 6).

It is important to note the loss of importance of the geometric motifs in favor of the richness of the figurative representations. Images of the deer, the goat and the sun frequently occur. Although they do not seem to follow a spatial standard as rigorous as that used on the vessels and steles, this is compatible with the system of representations of this society.

The motifs are distributed horizontally, with repetition of the same element used as the visual strategy in the same way as the vessels and anthropomorphic steles.

In this case, the parts are organized vertically and horizontally and adapted to the panel, obliging the viewer to look obliquely from top to bottom and from left to right in order to fully take in the design.

The motifs associated with the sun always occupy the upper part. Scenes representing active and passive scenes are distributed on the center and lower part.

They are a collection of scenes organized into well-proportioned spaces in which time has come to a halt. The narration consists of a series of static scenes.

Sovereignty occupies an upper position, but the space reserved in the panel is reduced for the benefit of other functions.

The figurative repertoire of the third function in relation to other functions is extended: the human figure is shown accompanied by livestock or hunting, and a wider range of animals is represented (dogs, oxen, deer of different types and ages, and pigs).

Returning to pottery: equality or status?

It seems increasingly clear that, strictly speaking, bell beaker pottery is not the only element that was used to designate status.

There seems to be a dichotomy between the standardized designs,

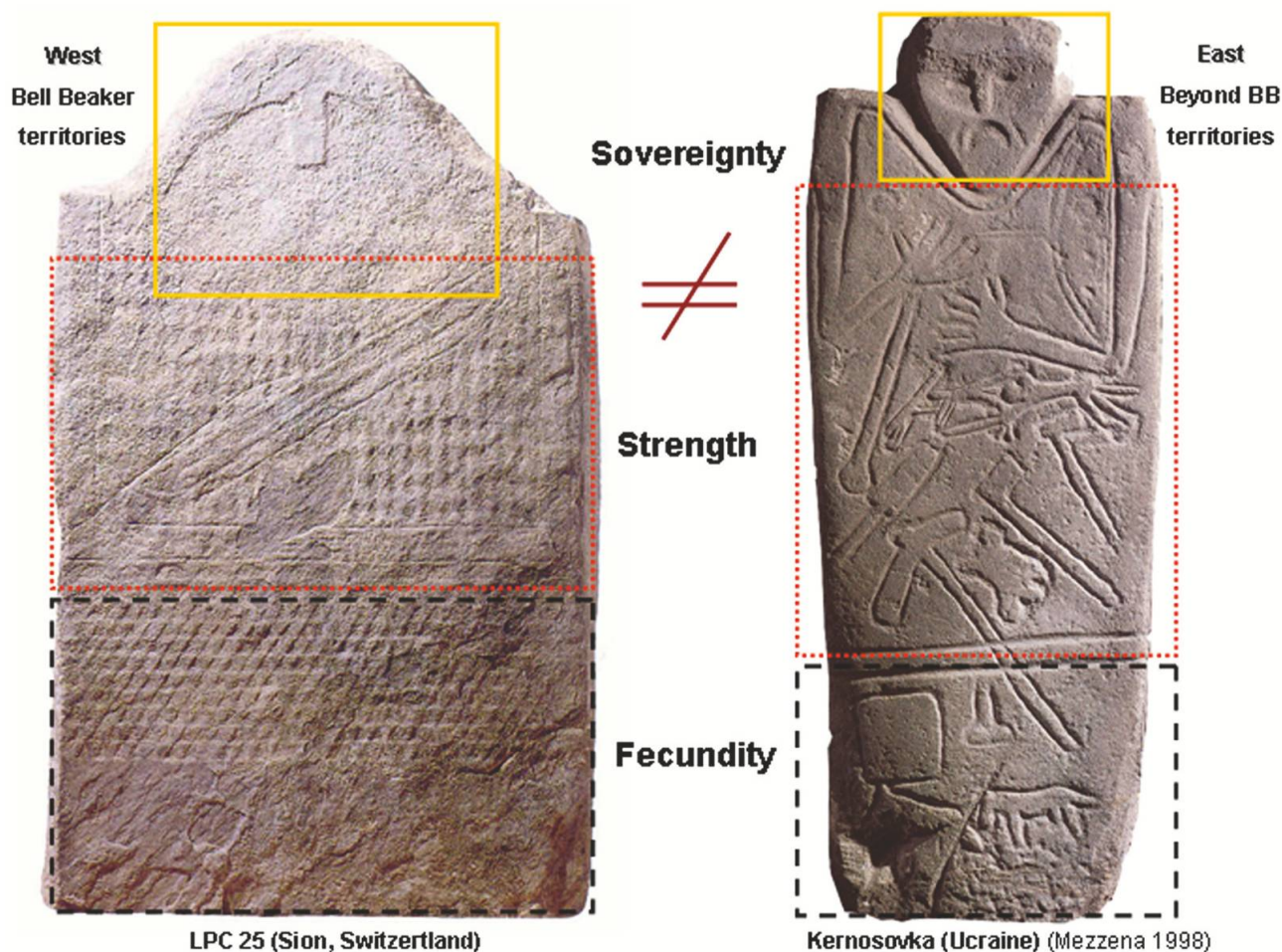


Fig. 4 Representative steles from two areas in the European continent: West vs. East.

which in general terms are those that consist of horizontal lines or herringbone motifs, and the ‘complex’ designs, which contain a wider range of elements (different combinations of grids, rhomboids, checkerboard patterns, triangles or zigzags), and which are more ‘individualized’: in many cases, it is difficult to find two vessels that are the same (this observation has been tested with a systematic study in Galicia, Brittany and Denmark (Prieto 1999a, 1999b, 2008; Prieto & Salanova 2009) and can be inferred in sites from other European zones based on reading various papers that have been published).

The use of these elements, and therefore their meaning, once again depends on the context. For example, it can be seen that in Denmark 79% of the vessels documented in tombs have complex motifs, with most of these burials being single graves, while only 15% of these designs are present in habitats. However, in Brittany and Galicia, only 21% and 16% of the motifs are complex in the burials, which are re-used megaliths, in favor of herringbone designs (51% and 57%), with an even lower percentage of vessels with complex decorations in the Galician habitats (7%) (Prieto 2011).

Based on the data found in the archaeological record of bell-beaker funerary contexts, it is possible to identify a relationship between the standardized motifs and the use of collective tombs, perhaps associated with a meaning that was connected with the

community or collective, or the absence of status (these are the motifs that were also used for female statues, see Fig. 3, last photograph¹), and a link between the complex motifs and the expression of ‘individuality’ and status, which in funerary contexts are associated with individual tombs. These are much scarcer in habitats, but are associated with figurative elements in funerary and ritual sites, masculine steles and rock art, as we have already seen. On the steles, the complex geometric motifs are converted into the truly standard elements.

Therefore, pottery designs – the element that is omnipresent in all of the contexts – form a part of the iconographic discourse of the society, and have a clear function of reinforcing the collective or

¹ In the tombs from bell-beaker contexts, there are specific elements of material culture that are associated with the warrior status that are connected with some adult males, but which are rarely found in the tombs of women and children. Examples such as the female tomb of *Tišice 77/99* in the Czech Republic (Turek 2006: 355) and the child’s tomb of *Landau-Südost* in Germany (Heyd 2004: 132) with an archer’s bracers, bows and arrows are not frequent. All of the funerary rite has a strong link with the gender and age of the deceased, from their body position (for recent publications on this theme, see: Krut’ová 2003; Turek 2000) to the size of the beakers that accompany them (Pierpoint 1980). In addition to this is the type of grave goods, which makes it possible to characterize to some extent the status the person would have enjoyed during their lifetime, or in any event, the status with which society wished to remember the deceased. The women’s grave goods, like those of the children, may reveal certain differences in terms of status, although everything points towards the fact that their status was inherited and associated with men, either as husbands or fathers.

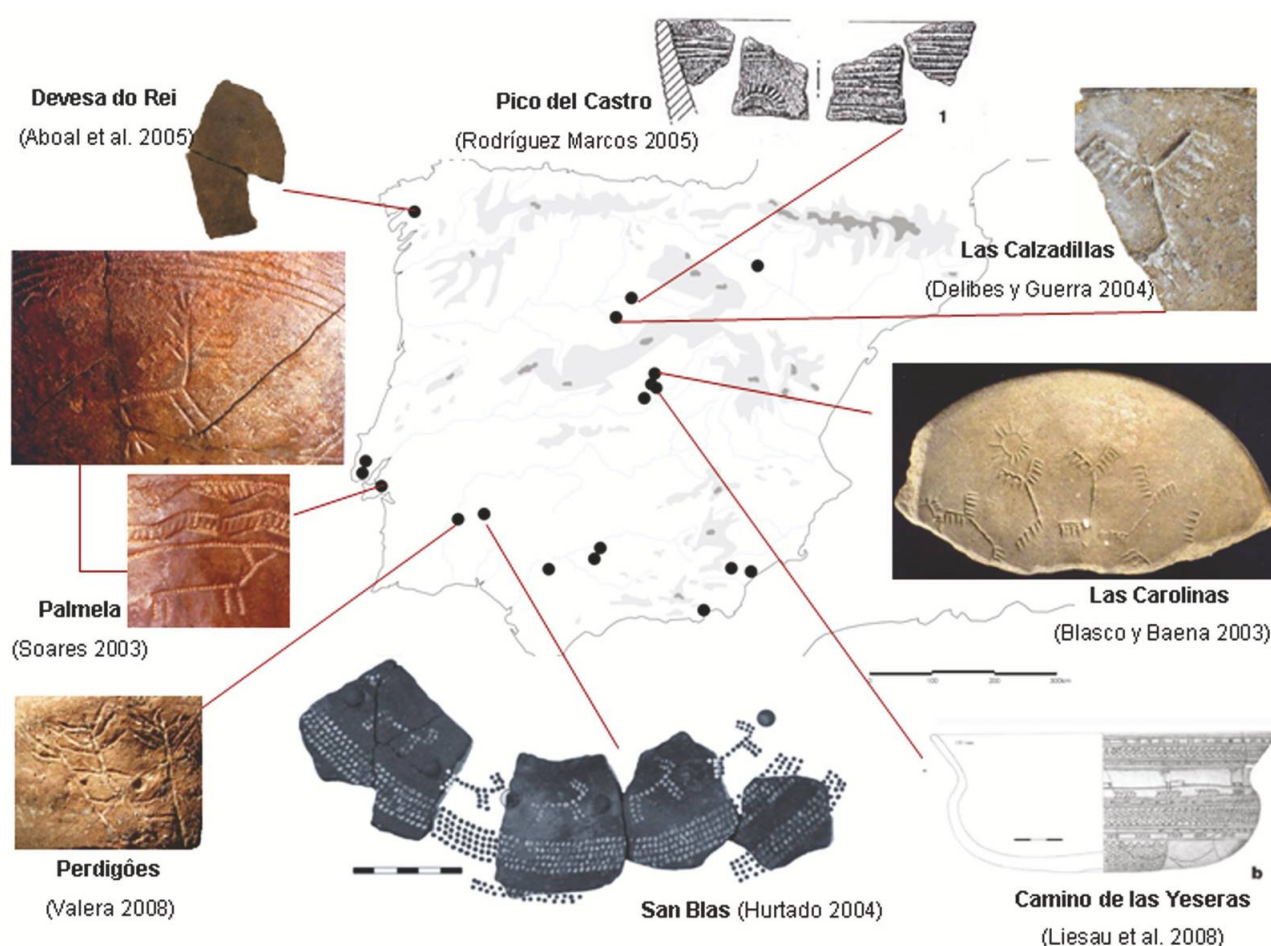


Fig. 5 Figurative representations on bell beaker pottery from the Iberian Peninsula.

the individual depending on different interests and requirements, or in other words, depending on the context.

Conclusion: *Ceci n'est pas un Campaniforme*

It has become clear that it is necessary to carry out an analysis of the relationships between the different motifs seen in each panel, considering the fact that the context reveals that the messages being transmitted are multiple and complementary, as the way of representing, making visible and manipulating the iconography coincides with the pattern of rationality of the bell beaker culture. The new system of representations serves to express the worldview that the society must adopt, understood as a tri-functional cosmos.

The iconography should be considered as another functional aspect of the society, because as a symbolic discourse it is the perfect mechanism for communicating and consolidating the new strategies of power. There is a definite intention behind choosing this decorative model to transmit the values and traditions of this society, and to articulate the construction of dialectic identities.

On the one hand, these dialectic entities consist of emphasizing a common model that is easy to identify on a large scale (pan-European identity), and on the other, emphasizing the 'individuality' and identity of the warrior elites compared with other social groups.

This *pan-European identity* is based on a series of specific elements, such as:

The structure of the geometric designs is the most practical and effective way of transmitting a supra-community idea of identity. The best representative is the vessel with standard decoration.

The iconography of the vessel itself as a metonym of the society. It is an iconography that is organized according to a group of simple, limited decorative elements, in which the horizontal line is the element that is always used to structure the panel.

A series of figurative motifs which are well recognized in the society.

The idea of the warrior *ethos* as a metaphor of the ideal cosmos. The representation of the warrior as a metaphor of the social body.

Steles and rock art are distributed in important transit points for the connection of territories situated long distances from each other, and as a result they are spaces selected to control the territory on a grand scale, and perhaps to express a certain power of 'cultural' control over societies that existed prior to the bell beaker period.

On the other hand, the *identity of the elites* is constructed through the use of certain designs in their benefit. These aspects are:

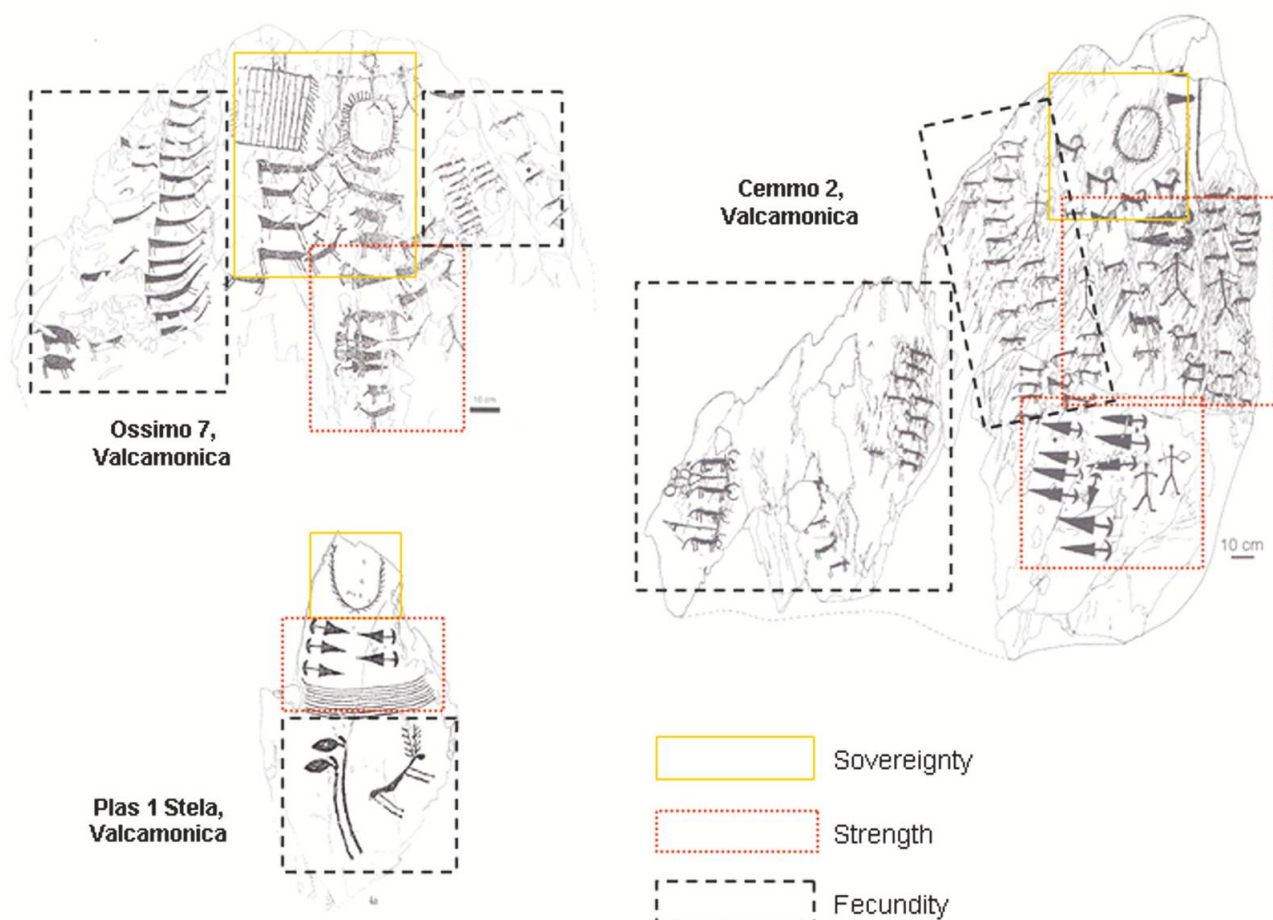


Fig. 6 Rock art carvings from Valcamonica.

The motifs have a wide range of meanings. Their spatial manipulation makes it possible to express internal differences within the social structure.

The selection of complex motifs makes it possible to establish divisions within the elite and, in fact, some geometric elements are selected in order to be associated with them (grids, rhomboids, checkerboard designs, triangles, zigzags, etc.)

The ways of representing the warrior justify their predominant role in society.

The structure of the geometric bell beaker decoration is so deeply rooted in the society that it lasted beyond it, something which can be seen in the continuity of certain motifs which were transferred to status symbols throughout the second millennium in the whole of Europe (weapons, male grooming accessories, gold adornments from the Mid and Late Bronze Age, etc.): zigzags, meshes, diamonds and triangles (the same that were selected to express the status of the warrior in bell beaker societies). These are the same motifs that adorn the image of warriors in anthropomorphic steles, as well as a large number of bell beaker vessels.

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VIOLENCE AND VIRILITY

Christian Horn

Abstract: Twelve Copper Age engravings have been discovered on rock panels in the region of Mont Bégo, where the anthropomorphic figures depicted have two striking features: a specialized weapon and male genitalia. The weapon is a halberd, which has been proven in recent research to be a deadly and fully functional weapon. This paper investigates the role of warfare and combat in the construction of male identities. It is argued that the violence intrinsic to hierarchical societies leads not only to warfare, but also to an increased dependency of the construction of the male identity on that of the warrior identity. The discussed engravings are climactic in the representation of both identities and are therefore products of a highpoint of this interdependency. It is the aim of this paper to show that rock art representation, societal structure, psychological rationalization and reproduction are interwoven to a high degree and influence each other.

Keywords: Mont Bégo, rock art, masculinity, warrior, warfare, identity

Introduction

One of the richest sources of prehistoric rock art (Lumley 1995, 2003) lies in the immediate vicinity of the 2872 m high Mont Bégo, in the French Alpes Maritimes. Over 30,000 engravings have been documented (Begin 1999: 2; Arca 2009: 284). This abundance of prehistoric pictures is only matched by the northern Italian Valtellina and Valcamonica (Casini & de Marinis 1994). Among the rock art near Mont Bégo is a group of anthropomorphic engravings united by two features. The individuals depicted each wield a halberd and, according to their displayed genitalia, they are male.

In total 263 halberd engravings are known from Mont Bégo, but just 34 are anthropomorphic and wield a halberd. Out of these, just 12 possess discernible male genitalia (Fig. 1). It is assumed that these 12 represent the culmination of a certain set of symbols in a specific relationship as will be described below. From this point of view, the remaining 22 depictions of anthropomorphic figures with halberds also present male warriors and the lacking genitalia can be explained either by style variations or by other circumstances that reduced the need to emphasize the symbolism to this extent. It was chosen to concentrate on the 12 engravings with genitalia because in these cases maleness does not have to be 'assumed' (Alberti 2006: 401). Therefore, the discussed construction of masculinity is not taken for granted and the challenge can be taken up to research this matter (Alberti 2006: 425). However, in every case the number of engravings is very small, but the research on prehistoric halberds in Europe has always had to struggle with a scarcity of material. Only 710 halberds have been discovered in Europe so far, from a time frame that covers at least 1,500 years (Horn in prep.). None of these halberds was discovered in the close vicinity of Mont Bégo. Thus, conclusions must be drawn with care.

In chronological terms, the rock art under discussion dates to the Copper Age, in the second half of the fourth millennium BC (Horn in prep.). Dating has to rely on analogy and is based on the chronology of northern Italian rock art, for example on rocks 4 and 23 in Foppe di Nadro (Anati 2008), and the newest radiometric data from metalwork (Dolfini 2010). In order to speak about halberds as weapons, it is important to point out that they were functional in combat, as has been shown by many recent studies

(Brandherm 2011; Horn in prep.; O'Flaherty 2007; O'Flaherty et al. 2008; O'Flaherty et al. 2011; but see Dolfini 2011 for a differing opinion). The halberd received its status as social signifier and ritual object by its use in combat (Horn 2011).

The theoretical background of this contribution is provided by newer archaeological approaches on gender relations, and the representation of body and person (Bevan 2006; Hansen 2002; Pedrotti 2004; Robb 1998, 2009) as well as psychoanalysis and its application in archaeological research (Sacco & Sauvet 2004; Russel 2006). The human mind, consciously as well as unconsciously, is involved in every expression made by humans. Just like language, rock art as well as other art produces and reproduces material symbols, which in turn influence the mind (Clark 2006: 304). Consequently, following Clark (2006: 293; Clark & Chalmers 1998), rock art can be seen as the 'extended mind'. These engraved images possess meaning, and content and execution are conscious choices made by a human and subconsciously influenced. Subsequently, rock art can be used as an entry point into the mind of prehistoric people and, thus, their (sub-) consciousness. This is the reason why researchers have seen rock art in general as connected to myths (Gibeault & Uhl 2004: 29), as a way to gain insight into the perceptions of the body (Robb 2009: 167), and as a reflection of social institutions (Vandkilde 2011: 374). As earlier indicated, the human mind is just involved and a variety of already mentioned features have a reciprocal influence back on the mind, for example on a person's ideology. Psychoanalysis provides researchers with an apt tool-set to gain some insight into this relationship and the sub-consciousness (Marcuse 2005; Freud 1999: 554; Fromm 2008: 257). Weiner (1992: 3-5) researched the dependency of cosmology on actual use of certain objects in day to day life, which is founded on the sub-conscious processing of everyday life over which things gain meaning. Subsequently, these things enter the imagination - the mind - and may be engraved on rock under a specific constellation of circumstances. As such, depicted objects can be seen as secondary agents, which communicate social positions (Ling & Cornell 2010). This is the starting point of this paper and provides the chance to assess the relationship of male warriors to the halberd and, ultimately, into the construction of maleness in the surrounding societies of the Monte Bégo regions in the Copper Age. Simmel (1933: 299) remarked that during times of war the value of males increases considerably. Women (and children) on

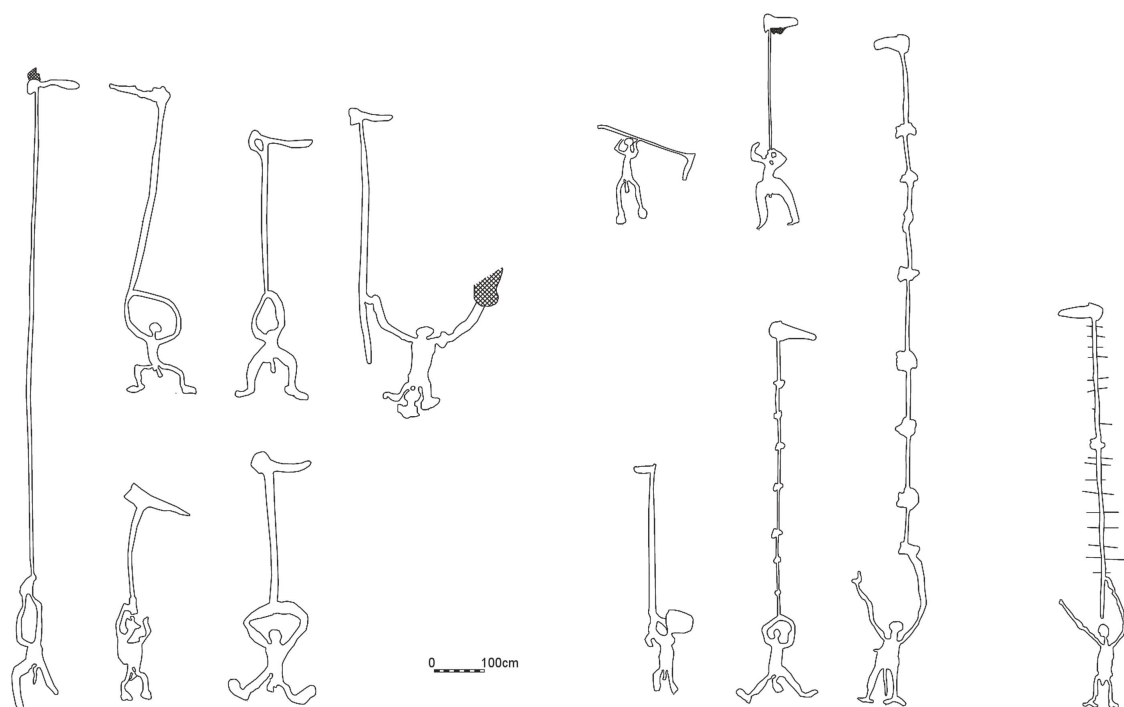


Fig. 1 Simplified drawings of the engravings examined in this study, scaled to 165 cm (redrawn from: Lumley 1995: fig. 124; scaling: C.H.). Blades: Type 2 (a-f); Variant 14b (g-k); Variant 9c (l).

the other hand tend to get pushed into support roles and the less visible domestic sphere away from actual fighting (Goldstein 2001: 127). Following this, it will be argued that violence played not just an important role in the construction of maleness¹ in the surroundings of Copper Age Mont B go, but that these warrior engravings point to a crucial time of increased warfare. This phase originates the cosmological need to emphasize the equation of virility and violence.

Little people and large weapons

The basis for the measurements were drawings published by Lumley (1995: fig. 124). They were redrawn in CAD and scaled to 165 cm, which was probably the average height of males in Copper Age Italy, in order to compare them. The average height of these populations have been researched by John E. Robb (pers. comm.²) and his results are confirmed by height measurements on the deceased from the mass burial in Fontino (Pardini 2002: 244). The depicted humans are usually called 'little people' (*petits personnages*), because the engravings are rather small and the handles of the weapons are obviously too long in relation to their bodies (Lumley 1995: 232, 2003: 271). The morphology of the halberds is comparable to halberd types in northern Italy and Tuscany. Parallels stem from graves in Villafranca-Veronese (Fig. 1a-f), grave 3 in Rinaldone (Fig. 1g-k), and Poggio Aquilone (Fig. 1l). A second set of drawings has been scaled to the average size of the respective halberd types and variants (Type 2, variant 14b and 9c, after Horn in prep.).

In relation to the average-sized anthropomorphic depictions the halberds are enlarged by a factor of 1.5 to 3.5 (Table 1). In order to test whether the handles were additionally enlarged measurements were taken from the drawings scaled to the average size of the original halberd blades. Generally, a length of approximately 100 cm - 220 cm has been observed (Table 1). Thus, the handle itself is probably not additionally enlarged. Poles were a very important part in fighting and historic examples of pole weapons such as the very similar pollaxe (O'Flaherty 2007) show a high degree of variation in length; hence different lengths are appropriate for different ways of fighting (Horn in prep.). This might seem exceptional, but it is most likely a normal spectrum for variations in length. However, two larger examples have been noted with handles of 348.5 and 373.7 cm in length. These stand out as exceptions and were probably too long for efficient use in combat. They are additionally enlarged probably by a factor of 1.5 to 3. One of these two (Fig. 1k) has cup-mark-like thickened areas along the handle similar to some other carvings (Fig. 1j-l). It might appear as if these halberds were fixed to several sticks, which may have been bound together to heighten the halberd blades in some kind of ritual. But measurements show that their handles have been depicted enlarged with a factor in accordance to the blades (see above). Thus most weapons are enlarged as a whole and represent normal poles. The two additionally enlarged handles must be considered attempts to highlight the weapon even further.

Little people and large genitals

The male genitals are of crucial importance to these engravings and to assess them further one has to be aware that these carvings are rather coarse (Lumley 1995: 54). Some errors, due to the rock surfaces, make it difficult to decide which features were intentional and which were not.

¹ Grave associations that include halberds are almost exclusively found in associations with males, for example in the Rinaldone Culture (Dolfini 2004) as well as later in the El Argar region (Schubart & Ulreich 1991) or the famous burial from Leubingen (H fer 1906). Only in one instance has deceased female been buried with a halberd, and that piece was miniaturized (Brandherm 2003: No. 546).

² See also <http://www.arch.cam.ac.uk/~jer39/italian-skeletons.html>

Table 1 Measurements on drawings scaled to 165 cm.

Engraving	Mean penile length (cm)	Penile length (cm)	Penile enlargement factor	Halberd type/variant	Mean length Type/variant (cm)	Blade length measured (cm)	Blade enlargement factor	Shaft length measured (cm)
Fig. 1a	13/14	38,7	3,0/2,8	2	34	96,1	2,8	975,7
Fig. 1b	13/14	23,4	1,8/1,7	2	34	107,7	3,2	414,3
Fig. 1c	13/14	30,3	2,3/2,2	2	34	125	3,7	355,7
Fig. 1d	13/14	69,4	5,3/5,0	2	34	79,1	2,3	511,8
Fig. 1e	13/14	27,5	2,1/2,0	2	34	117,9	3,5	242,8
Fig. 1f	13/14	40,2	3,1/2,9	2	34	117,7	3,5	338,0
Fig. 1g	13/14	24,4	1,9/1,7	14b	25	49,9	2,0	197,6
Fig. 1h	13/14	8,8	0,7/0,6	14b	25	68,4	2,7	291,3
Fig. 1i	13/14	19,5	1,5/1,4	14b	25	41,1	1,6	360,0
Fig. 1j	13/14	35,9	2,8/2,6	14b	25	91,7	3,7	593,1
Fig. 1k	13/14	52,7	4,1/3,8	14b	25	66,3	2,7	1009,1
Fig. 1l	13/14	13,9	1,1/1,0	9c	23,5	81,4	3,5	619,6



Fig. 2 Grey areas accentuate testicles indicated by an empty space; grey lines show areas where the testicles are engraved (after Lumley 1995: fig. 124; modification CH).

It is very difficult to depict three-dimensional features in a full frontal view on a two-dimensional surface. This is exemplified by a variety of examples from Sweden, Russia and Nigeria displaying human figures engaged in sexual intercourse (Dolgovessova 2000:60, fig. 7.1-2). Even though these figures are depicted in an activity that requires a phallus, this body part points downwards. A similar style of visualization is visible on the carvings under discussion. Consequently, the engravings on Mont Bégo in most cases depict erect rather than flaccid male genitals. The apparent 'kink' some of these carvings possess might be explained by the desire to depict testicles, in an attempt to let the genitalia appear as naturalistic as possible (Fig. 2). Some of the petroglyphs on Mont Bégo visualize certain features such as mid-ribs or rivets (Lumley 1995: fig. 100.1, fig. 104.7; see also fig. 1c) by the interplay between carved and non-carved areas. An oval unengraved area, which can be interpreted as one testicle, usually accompanies the

observed 'kink'. The second testicle varies in depiction style. Sometimes it is a similar shaped engraved area (Fig. 2.1-2) or it is visualized as an equally 'empty' zone (Fig. 2.4-5). If these 'kinks' are indeed connected to the visualization of testicles, they are not in contradiction to an interpretation of the depicted genitalia as erect.

Like the blades, the male genitals seem in most case to be enlarged. In order to verify this impression measurements were taken from the human depictions scaled to 165 cm height. The sizes have a wide range, from 69.4-8.8 cm (Table 1). The depiction with the greatest length has to be excluded, because the area of the genital seems to be overlapped by another engraving. To assess the extent to which this feature is enlarged, one has to rely on modern observations into that matter. A recent urological overview with over 5,000 individual measurements provides a spectrum of erect



Fig. 3 Over-equipped warriors with axe, sword and phallus from Aspeberget, Tanum (<http://www.shfa.se/Bild/VisaBild.aspx?id=307&Bildtyp=v&maxWidth=550>).

penile length of 12.7-16.4 cm (Wylie & Eardley 2007: table 1). As males in Copper Age Italy were somewhat smaller than nowadays, males on the lower end of the range of the mean values (13-14 cm) are taken as point of comparison. If this set up is accepted the scaling ranges from factor 0.6 to 4.1 (Table 1). The lowest factor of 0.6 stems from an example that measures 8.8 cm and it might be a case where indeed a flaccid genital was depicted. However, the divergence and variation is more extensive than for the blades.

Genitals and blades - discussion

The enlargement factors for blades seem to be more restricted than those of the genitalia. This might be due to several reasons. First and foremost the blades are manufactured objects with some control over their proportions. Fighters tend to strive for weapons that are best suited for their fighting style (Warnier 2011). Presumably, this leads to certain standardizations in different types, which are likely to be reflected in the carvings under discussion. On the other hand, as a natural feature, the size of genitals is more arbitrary. It is, however, not assumed that these engravings depict specific individuals, because individuality was probably not a part of the prehistoric consciousness (Huth 2003:229). Ultimately, these carvings were made by hand and by different individuals, which might very well be the source of minor differences. The flaccid and lesser enlarged genitals may be seen as style variations due to temporal differences, perhaps conditioned by different stories (Vandkilde 2011: 374) connected to these engravings, or otherwise differing conventions in depicting males (Barfield 1998:144). In light of the continuous line from weapons without human depiction, weapons connected to human depictions but without genitals, to weapons wielded by humans depicted with genitals, it seems to be a culmination in the display of violence. The means to do so are the depiction of the implement with which violence is carried out, its connection to the agent of violence and the enlargement of the signifying features.

The diversity observed in depiction modes and enlargement factors adds, apart from the low number of these depictions, further problems for the interpretation of the engravings under discussion.

Yet, they are unified by the desire to pronounce both the weapon and the male genitalia. The weapons are held high above the head and the genitals are generally exempt from surrounding features by the outward bend of both legs, in order to heighten the emphasis of both. This shows a connection between weapon and genitalia. They are equated with each other as important parts of the male body and the body of the warrior. In this way the identity of being a male is equated with being a warrior. War creates war-specific identities (Otto 2006: 385), most prominently the warrior identity (Vandkilde 2011: 365). If Simmel's comment of the heightened importance of males during war is kept in mind, then the connection and its culmination displayed in the rock carvings from Mont Bègo becomes understandable.

Violence and the male/warrior identity - Outlook

The above observed connection of the warrior identity and the male identity is not unique to the region of Mont Bègo in the Copper Age. The following remarks are a brief survey to illustrate this statement and to comprehend the possibilities of the social constellation under which being (or becoming) a warrior is a means to construct a male identity.³

Temporally and geographically closely related to the depiction of male warriors on Mont Bègo are the graves of the Rinaldone Culture in Central Italy. Many of these graves are over-equipped with weaponry, including in many instances halberds and presumably deceased males. Examples are found in graves 3 and 5 from Rinaldone (Dolfini 2004: Tab. 3-7), Poggio Aquilone (Brizio 1899) and Casanuova di S. Biagio della Valle (De Angelis 1995). Over-equipment is the multiplication of certain elements as a social means of representation (Hansen 2002:167; Pedrotti 2004:122). The overprovisioning of weaponry is visible on northern Italian stelae with the depiction of multiple halberds and other weapons, for example in Capitello de Due Pini and in Corni Fresci (Casini & de Marinis 1994; De Marinis 1994).

³ The author is fully aware of the difficulties in using social anthropological data in archaeological accounts (Hodder 1982).

This multiplication is achieved in the rock carvings of Mont Bégo by other means, in the amplification of a single weapon or genital, compared to the rest of the body. A similar enlargement of a weapon connected to a human figure is displayed on stelae 2 from Caven (Valtellina, Italy).

That warfare and fighting or violence in general was a part of the social reality is drastically demonstrated by the grave from Villafranca Veronese. The deceased in this grave had an arrowhead embedded in his temple (Salzani 2007:80). Among his grave-goods was a halberd. Equally equipped was the dead male from grave 2 in Spilamberto. Three flint arrow points were scattered between his thorax and his pelvis (Bagolini 1981: fig. 9). These points possessed no common directionality or parallelism, thus they were rather embedded in the body, then put down as grave-goods in a quiver. Finally, the contemporary ice-mummy, discovered in the Similaun Alps, got shot in his back shortly before he died (Gostner & Egarter Vigl 2003:62).

Rock art from the Scandinavian Bronze Age is further removed, but strikingly similar in the desire to equate weapons and male genitalia. Anthropomorphic figures wield a large variety of different weapons and were frequently depicted with erect genitalia (Kristiansen 2001: fig. 5.4; Jockenhövel 2006: fig. 2.1). An engraving of sexual intercourse from Bohuslän (Lindgren 1999: fig. 2.3a) depicts the hilt of a sword as a prolongation of the penetrating male genital. From this vantage point many other figures not engaged in a sexual act show the same prolongation and transformation of their phalli into swords (see for example Fig. 3), in this instance the penis represents the hilt and is continued by a normal blade or sheath (Fig. 3). Some anthropomorphic figures possess more than one weapon (Ling 2008: fig. 9.2, fig. 9.4). There is a rich corpus of such themes in Scandinavian rock art, and yet again, in the most pronounced carvings the components emphasized are those of the warrior over-equipped with weapons and of the male penetrating another person or just displaying an erect male genital. Like at Mont Bégo, not every figure with a weapon has an erect genital, but there is a culmination of this symbology.

The potential to violence as well as its actual use are necessary prerequisites to proof virility, and thus gaining manhood and a male identity. This is symbolized by the transformation of the male genital into a weapon, which is depicted on Scandinavian rock art and is also known from the myths of North American natives. Male genitals hurt and are thus equated with weapons, they are for example able to spear a person (Lévi-Strauss 1976b:276-282) and lacerate the abdomen of a woman (Lévi-Strauss 1976b:133). Another myth shows not only the equation of the penis with a potential weapon, but also the interdependency of exchange object, working tool and weapon. In this myth, Coyote receives a penis that equals an axe in exchange for his own penis, but when he has no trees to cut, the penis-axe turns against him and attacks (Lévi-Strauss 1976b: 508). Finally, a defamatory statement against Coyote's penis triggers the immediate outbreak of violence (Lévi-Strauss 1976b:426). These short remarks exemplify how objects gain multidimensional meanings (Gosden & Marshall 1999; Kopytoff 1986), get embodied (Warnier 2011) and ultimately reflect back on the construction of male identity.

The necessity of violence in the construction of males was also observed by anthropologists in actual day to day life. Young eastern African tribesmen (Oromo) have hardly any chance of gaining manhood until they have killed either a man or a dangerous animal (Reid 2007: 207). In addition, it was also necessary to kill

to obtain a wife. Members of some tribes of eastern Ethiopia had to present their future bride with a trophy, in order to court her. This was easily achieved during war times, but in times of peace special raids were organized to gain these trophies (Reid 2007:208-209). Reid points out that in this case violence is a specifically male activity (Reid 2007:209). Equally, in New Guinea young males had the possibility of being initiated into manhood before they reached the necessary age by showing bravery in battle. This is reported in a myth that has close connections with real life (Godelier 1987: 149). The latter example also shows that it is a behaviour perceived as 'male' that leads to the initiation into manhood, which means that females might have this chance at any given time, too, through the use of violence in a society with a great appreciation for fighting and war. One example of this is possibly observable in a grave from Cerro del Culantrillo (Spain), in which a female body was buried together with a miniaturized halberd (Brandherm 2003: No. 546). Women willing to engage in actual fighting usually have to take on a male identity to overcome resistance of their biologically male co-combatants (Goldstein 2001: 106-111). In turn, enemies are frequently gendered female in order to symbolize domination over them (Goldstein 2001: 356-362), or in other words, to depict them as the weaker part. The New Guinean example shows that individuals successfully engaged in war were gendered male, despite the general rules prohibiting such an identity. The phenomenon of females openly being warriors and reaching as such the upper echelons of society is 'widespread and yet, in most times and places, rare' (Goldstein 2001: 112). This frequently goes along with being identified as male, such as the late Hallstatt/early LaTène 'princely' grave in Vix (Arnold 1991). Accordingly, the individual buried in Cerro del Culantrillo was perhaps 'gendered' male, despite biologically being born female.

In any case it shows that the connection between weapons, violence and gender is by no means a linear system (see also Robb 1998: 340). The observations above show that violence as an important factor in the construction of male identities is present in hierarchical societies frequently engaged in warfare. On rare occasions this can lead to a defeat of traditions and biological prerequisites for this male identity.

Conclusion

In this paper, it has been argued that certain engravings in the Mont Bégo region emphasize the connection between warrior and male identity by a pronounced display of weapons and male genitalia. This is just one aspect of a multitude of others connected to these engravings. However, weapons can always be read as a symbol for male genitalia (Freud 1999: 361, 385), when appearing in relevant contexts, such as rock art - for example the equation of daggers and male genitals in Copper Age northern Italy (Barfield 1998: 143-145). And subsequently, a male warrior ideology has been recognized in the circum-alpine regions before (Pearce 2007). But as society is produced and reproduced in symbolic transmission (Kristiansen 2001), there are variations and changes in emphasis on certain symbols, and these are meaningful. It has been shown that this leads to a resurfacing of the pronounced connection between the construction of maleness and violence, in several times and places. These societies are hierarchical and war plays an important role. Hierarchy is in itself institutional violence⁴ (Adorno & Horkheimer 1986: 130), war as an outlet

⁴ Adorno and Horkheimer (1986: 130) use the German word 'Gewalt', which is frequently translated into English as 'power', thereby obscuring to some extent the ugly side of this social institution. In German, the word 'Gewalt' holds a more complex meaning of power as well as violence. The latter was chosen to emphasize the specific relationship observed in this paper.

is violence in a changed mode. Following Simmel (1933: 299) in his remark about the increased value of males or persons 'gendered' as such in war, the anthropomorphic engravings under discussion signify a time of increased war. Ultimately, this led to the observed climactic representation of the symbols of halberd and male genitalia in rock art. At other times and in other places this climax might be displayed in other ways, such as in grave assemblages e.g. in Tuscany during the Copper Age. If the discussed representations are the peak in the display of maleness, combat and the halberd, then a single depiction of a halberd might possibly also equate with a male, just as the dagger itself symbolizes a phallus (Barfield 1998: 144). The rock carvings under discussion here reflect the interdependency of male and warrior identity. Inherently, they are aimed at a reproduction of the drive of young males to become warriors (DeMarinis 1988; Goldstein 2001: 411). On a psychological level these engravings can be seen as attempts to rationalize the connection between violence and virility present in their societies.

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FOOTPRINTS ON THE ROCK FACES – FOLLOWING THE TRACKS OF COSMOLOGICAL ARCHETYPES AND PICTOGRAMS FOR MILLENNIA OF PREHISTORY

Ulf Bertilsson

Abstract: According to our knowledge carved footprints appear in a variety of prehistoric cultures and rock art sites during a period of 3,000 to 4,000 years. This indicates that the carved footprint represents a phenomenon that contains condensed symbolic information of unusual significance, strength and life span. In that respect the footprint might, just as the cup mark, be seen as a pictogram and an archetypal symbol. It has been interpreted in different ways: as a sign of an invisible deity that could not be depicted but announced its presence by its footprint, as a sign of adoration or as representing a deceased person. However, this does not necessarily mean that all engraved footprints have the same design or the same meaning. Quite the opposite! This is also clearly testified by the dispersed appearance of this symbol in the prehistoric record.

Keywords: Rock art, footprints, invisible deity, adoration, symbol, archetype, pictogram, Stone Age, Neolithic, Bronze Age, Iron Age, Har Karkom, Zurla, Nämforsen, Bardal, Järrestad, cosmology, longue durée, conservative blocks

Introduction

Rock art is one of the most widespread cultural legacies of humankind. It is found in all continents except for the Arctic and Antarctic. It is known from more than 2,000,000 sites estimated to contain approximately 20,000,000 engraved or painted images. The oldest examples of rock art yet known were discovered in the Blombos Cave outside Cape Town in South Africa. It consists of two small pieces of ochre with geometric patterns that were engraved about 75,000 year ago (Henshilwood 2006:82p). The masterpieces on the walls of the Chauvet cave in France were painted some 30,000 years ago (Clottes 2002:44p), and the oldest engravings with similar motifs were made in Foz Coa in Portugal about 10,000 years later (de Carvahlo, Zilhao & Aubry 1996:17 and 51; Zilhao 1997:434). In Scandinavia, the oldest engravings are of similar type but are estimated to be less than half as old (Gjerde 2010:196, fig. 99).

One peculiar trait often observed in rock art is the resemblance of images and motifs through time and space. A striking such example is the cup mark that appears in the Australian Palaeolithic, European Neolithic, Bronze Age and Iron Age as well as in the slash-and-burn Finnish culture in historical times century (Bladh 2000). This probably makes the cup-mark the most ubiquitous symbol carved into stone. Another intriguing rock art symbol is the footprint, which occurs less frequently, but is still widespread in its distribution. Carved footprints appear in a variety of prehistoric cultures and rock art sites during a period of at least 5,000 years. This signals that it represents a phenomenon that contains symbolic information of unusual significance, strength and life. In that respect the footprint may, like the cup mark, be seen as a pictogram and/or an archetypal symbol – an engraved sign that would be understood by everyone like a universal symbol. It has been interpreted in different ways: as a sign of an invisible deity that could not be depicted but only announces its presence by its footprint (Almgren 1962), as a sign of adoration or as representing a deceased person (Anati 1994:166; Gavaldo 2009:301pp). However, does this mean that all engraved footprints have the same design or the same meaning? And further, if so, is

this testified by the dispersed appearance of this symbol in the prehistoric record?

Before turning to the presentation of some possibly indicative examples of this situation, it seems appropriate to elaborate a little further on the concepts of pictogram and archetype. Pictogram is a concept that has been in use for a long time in the study of symbols, images and art. It is here used with reference to its general meaning: ‘a sign that could be commonly recognized not requiring preunderstanding’. Emmanuel Anati, in his study of rock art being the primordial language, ascribes a more specific meaning to this concept: ‘*Pictograms* (and *mythograms*): Are figures in which we may recognize identifiable forms of real or imaginary objects, anthropomorphic and zoomorphic figures’ (Anati 1994:39p). The concept of archetype is also used here with reference to a general meaning, not necessarily fully accurate when being compared to the one used in psychotherapy. Seemingly without any detailed definition of this concept Anati is convinced of its existence and expression in prehistoric rock art: ‘Thus the existence of logical archetypes may be postulated’ (Anati 1994:52).

In this study we will try to illuminate this state of affairs by presenting some examples of footprints carved into rocks in prehistoric times. The compositions and contexts, in the widest sense of these concepts, present a varied picture.

Case studies

Har Karkom, Negev Desert in Israel

The first example I want to present derives from the Sinai Mountain in the Negev Desert in Israel. The Italian Archaeological Expedition to Israel has studied it intensively since 1980 (Anati 2001). The site has been inhabited for at least 40,000 years as witnessed by the extensive archaeological record of finds and structures from settlements, burials and rock art. Among the numerous engraved images on rocks and boulders are some representations of footprints (Figs. 2-4)



Fig. 1 Map of the rock art sites with footprints considered in this study.

The footprint in Fig. 2, like the two depicted on Fig. 3, are of the type with a contoured outer line but without a heel line normally considered to indicate a sandal. On the other hand no toes indicating a naked foot have been engraved. One reason might be that the footprint here should be seen as a general symbol commonly designed without any intention to depict a naked human foot. The anthropomorphic figure inside it is also designed in a stylized manner that expresses no naturalistic intention to resemble any specific human. Actually there is a certain resemblance to some bronze figurines with the inward curved arms indicating a classical 'hips attached' position (Fredell 2003: 192pp, fig. 5.16). A winding snake is carved connected to the outer part of the footprint. Having no information about Anati's interpretation of this composition at Har Karkom, we want to point to the fact that snakes and footprints appear in a similar composition to the rock engraving at Järrestad in Scania in the south-east of Sweden (www.shfa.se/Bildsök/1349: Järrestad 13 fotspiral 2002_CB).

Our second example from Har Karkom (Figs. 3-4) is a composition with an ibex placed above two contoured and paired feet. Anati (2001) suggests a dating to the Chalcolithic or Early Bronze Age, which in this case means the third millennium BC. He also

suggests that the footprints are a sign of adoration of the ibex. If we accept this general meaning of the sign foot print, Anati's interpretation seems plausible.

We will now put down our feet just south of the Alps in Valcamonica in northern Italy. In that valley, located some 40 kilometres north of the town of Bergamo, we find one of the largest concentrations of rock art in Europe and in the world. In total more than 200,000 images have been carved into the hard rocks of the valley slopes, starting in the Mesolithic and continuing until Medieval times (Anati 1976; Gastaldi 2009 a and b; Fossati 2010 a and b).

Zurlo, Valcamonica in Italy

Among the engraved images in Valcamonica there are many carvings that depict footprints, although they are not the most frequent type of figure. At Campanine there are several panels with mostly contoured footprints, either single ones or paired. Many of those have interior decorations or patterns and on one occasion the footprints are connected with, superimposed on or encompass other engravings (Gavaldo 2009: 299-304). Sometimes



Fig. 2 Engraved boulders from Har Karkom. To the middle left is an engraved footprint enclosing an anthropomorphic figure. Dating to Chalcolithic/Bronze Age. Photo: Emmanuel Anati 97 B2:II-21; WARA W05999



Figs. 3 and 4 Tracing and photo of engraving of an ibex and two paired feet at Har Karkom. (Anati 2001:142 with references). A peculiar trait of this composition is that the left foot seems to be placed to the right. The left foot could then have been expected to represent the right one, but this is not so obvious from its design, looking like a hybrid.



Fig. 5 Unpublished tracing by Umberto Sansoni of rock engravings depicting warriors, animals and footprints on the panel Zurla 1, Ceto, Valcamonica, Italy. The blue (light grey) coloured images represent a separate layer of engravings sometimes superimposed on and sometimes superimposed by the layer with the black coloured images. The red (thin) lines represent cracks in the surface of the rock. The tracing will be published in Sansoni's paper in the proceedings from the symposium 'Picturing the Bronze Age' arranged by SHFA at Gothenburg University in Tanum in October 2012. The book will be published in the 'Rock Art Series' by Oxbow.

they consist of human figures like the ones from Zurla (Fig. 5) with rectangular trunks and raised arms carrying spears. In both cases the spears seem to penetrate the outer contour line of the foot. It looks doubtful whether this is an engraving consisting of originally paired feet. The reason is simple: the foot engraved to the right looks like a left foot and vice versa. Inside the foot to the left there is also a figure consisting of only a head on top of two raised arms, of which the left holds an axe. A similar composition with footprints also appears on another panel at Zurla (Anati 1994:65, fig.52). Anati therefore dates these footprints to the Early Iron Age, approximately 850-700 BC.

Leaving the footprints of Valcamonica, we may conclude that there are some similarities to those at Har Karkom in Israel. This is most valid for the other form and to some extent also for the composition with additional engravings in the interior space. However, the design of these engravings differs, as does the dating, the former belonging to the third millennium BC and the later to the first millennium BC. One obvious reason behind that would be that the use of the footprint as an engraved symbol did appear independently and without direct contact between these two areas, regardless of the similarities of the basic shape. This

actually seems to speak in favour of our hypothesis that footprints could be considered as a pictogram or an archetypical symbol.

Fredell criticizes a trend to explain rock art symbols using the help of meta-contextual and psychological interpretations as has been strongly advocated by Anati and others. According to her, the big deficiency is the lack of intention to put the assumed archetypes in an historical or social context (Fredell 2003:11). This seems like a simplification or misinterpretation. When studying the research that has been conducted on rock art at Har Karkom and in Valcamonica, it seems rather obvious that the source material from both sites has been put into its local archaeological context.

We will now turn our intention to a rock art site situated approximately 3,000 kilometres to the north of Valcamonica, namely Nämforsen in Sweden.

Nämforsen, Ångermanland in Sweden

At Nämforsen, one of the largest and most intriguing rock art sites in Scandinavia is situated in an originally highly dramatic setting at a large rapid close to the estuary of the Ångerman river into a long fjord of the Baltic sea penetrating today's inland of this

area. On the rocks in the then furiously raging river were around 2,000 images engraved during the late Stone Age and the Bronze Age (Baudou 1975:75pp). The area was dominated by hunting cultures at least until the birth of Christ (Baudou 1975:148). This has also resulted in the designation hunting carvings, which is strongly supported by the local and regional archaeological record consisting of numerous dwelling sites, trapping pits and stone artefacts. The oldest engravings seem to date back more than 6,000 years (Gjerde 2010: 381; Sjöstrand 2010:140).

In addition, the engraved figures, consisting of numerous depictions of elks in combination with humans carrying elk head staffs, boats with elk-headed prows and salmon, seem to testify to this dating. However, there are some interesting features that may indicate a connection with the rock art producing cultures in southern Sweden, traditionally bearing the etiquette agriculture carvings. This concerns among other things the composition of the engravings with many accumulated small figures and superimpositions on some of the rocks, but also the presence of specific images such as circle crosses and footprints. These images are 'normally' considered to be part of the corpus of southern rock art imagery (Bertilsson 1995:51pp and references).

Today this hypothesis has become more or less accepted in wide research circles (Gjerde 2010 with references). The depictions of some of the central panels at the site presented below illustrate the cumulative nature of the engravings. The first one is dominated by a large elk carved in a naturalistic manner being surrounded by smaller elks engraved in a more schematic and less authentic style. In the middle and upper right parts there are also three paired footprints. They are all contoured with a heel line and, except for the middle pair, appear symmetrical. At least this pair looks like it was deliberately placed close to the big elk.

This type of footprint would generally be considered to be later than the naked foot. By 'later', a dating to the Late Bronze Age or Early Iron Age is meant (see the discussion about the rock carving at Järrestad in Scania below). Since the habit of carving images into the rocks at Nämforsen has previously been suggested to end in the Middle Bronze Age around 1000 B C (Gjerde 2010:381), we may have run into a new chronological issue here, indicating that the carvings were made for a longer period of time than hitherto understood. The alternative explanation would be that the footprints of this type at Nämforsen were several hundred years older than those at Järrestad. This is an interesting hypothesis that, due to space limitations, will not be pursued any further here.

The second panel from Nämforsen is composed in a different way. All figures, weather elk, salmon, humans or boats are of a smaller, schematic type. This also includes two paired and one single footprint as well as one circle-cross. One of the paired footprints appears to be superimposed on an elk and a fragmentary boat, which indicates that it was engraved sometime later. There are also many other superimpositions on this panel most probably meaning that new images have been added during a certain period of time of unknown length.

From Nämforsen we are going to move across the Scandinavian mountain ridge to the west to Norway and the magnificent rock art site at Bardal, in Trøndelag.

Bardal, Trøndelag, Norway

This panel is, if not unique, one of the few in Scandinavia where the two major rock art traditions, that of the northern hunters and

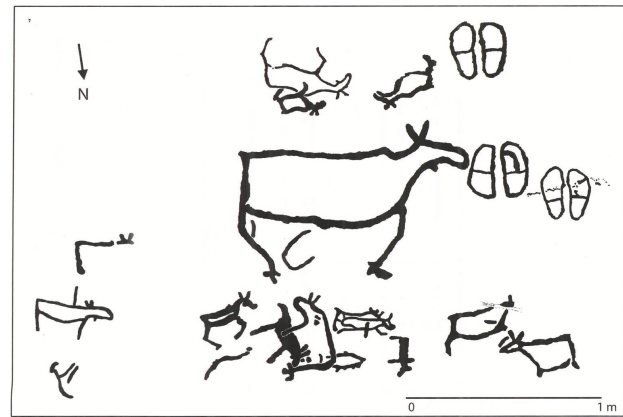


Fig. 6 Panel E 2-3 of the main group on Brådön from the report on new documentation completed between 2001-2003 originally recorded by Gustaf Hallström (Larsson & Broström 2011:96).

that of the southern farmers, are both abundantly represented. The older stratum consists of big contoured animals like elk, reindeer, whale and goose, all designed in a truly naturalistic fashion. Some of the elk are represented only by parts of their body like hind legs (Mandt & Lødøen 2004:105-106; Sjöstrand 2010:142p, 2011: 138-141.). This style is the oldest in Scandinavia (Gjerde 2010: 196p). It has obvious similarities with the Late Palaeolithic engravings in Portugal but not necessarily with any chronological or cultural contact.

The more recent stratum at Bardal obviously belongs to the Bronze Age as testified by the beautiful boats and spirals that can be seen in Fig. 8. The big boats are of Period 1 or 2 type, like some of the smaller ones. There are also some footprints in pairs or even tripled, all contoured and missing their heel lines. The former seem to be placed in contact with one of the elk and one pair is under the tail of a whale but also in line with a Bronze Age boat. This may indicate an early and possible multi-period dating, but it should not be excluded that they just as well might belong to later phases like the Late Bronze Age or Early Iron Age (see also Sognnes 2011:187-189). This is due to the fact that the manner and size in which they are executed correspond seemingly well to some of the humans with square trunks and swords. On the lower central and right part of the panel there are even some boats that belong to the Early Iron Age according to the schedule established by Kaul (1998) and later refined by Ling (2008:60,105). This leaves us with a rather wide spectrum of possibilities about the dating of the footprints: they could have been made in the Stone Age or the Early Bronze Age, or in the Late Bronze Age and Early Iron Age. Anyhow, they look very different from the ones engraved at Nämforsen. To us, this indicates that the footprint has characteristics, which may be attributed to an archetypical symbol. In our opinion, this fact is further strengthened by its appearance in the two different archaeological contexts. But before concluding this study we are going to look at yet some other examples from the extraordinarily rich rock carving at Järrestad in Österlen in Scania, located approximately 1,000 kilometres south of Nämforsen.

Järrestad, Scania in Sweden

This panel is situated in the centre of one of Europe's richest archaeological landscapes originally full of Neolithic megaliths,

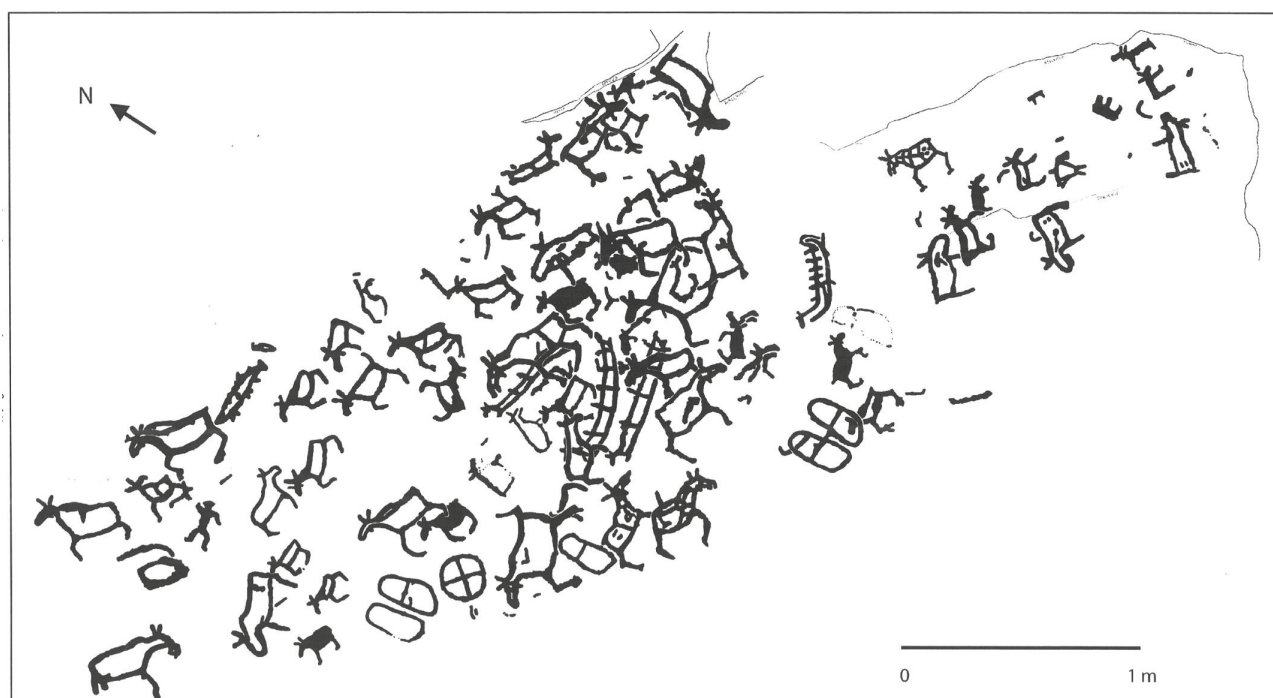


Fig. 7 Panel E: 4-6 of the main group on Brådön from the report on new documentation completed between 2001-2003 originally recorded by Gustaf Hallström (Larsson & Broström 2011:97).

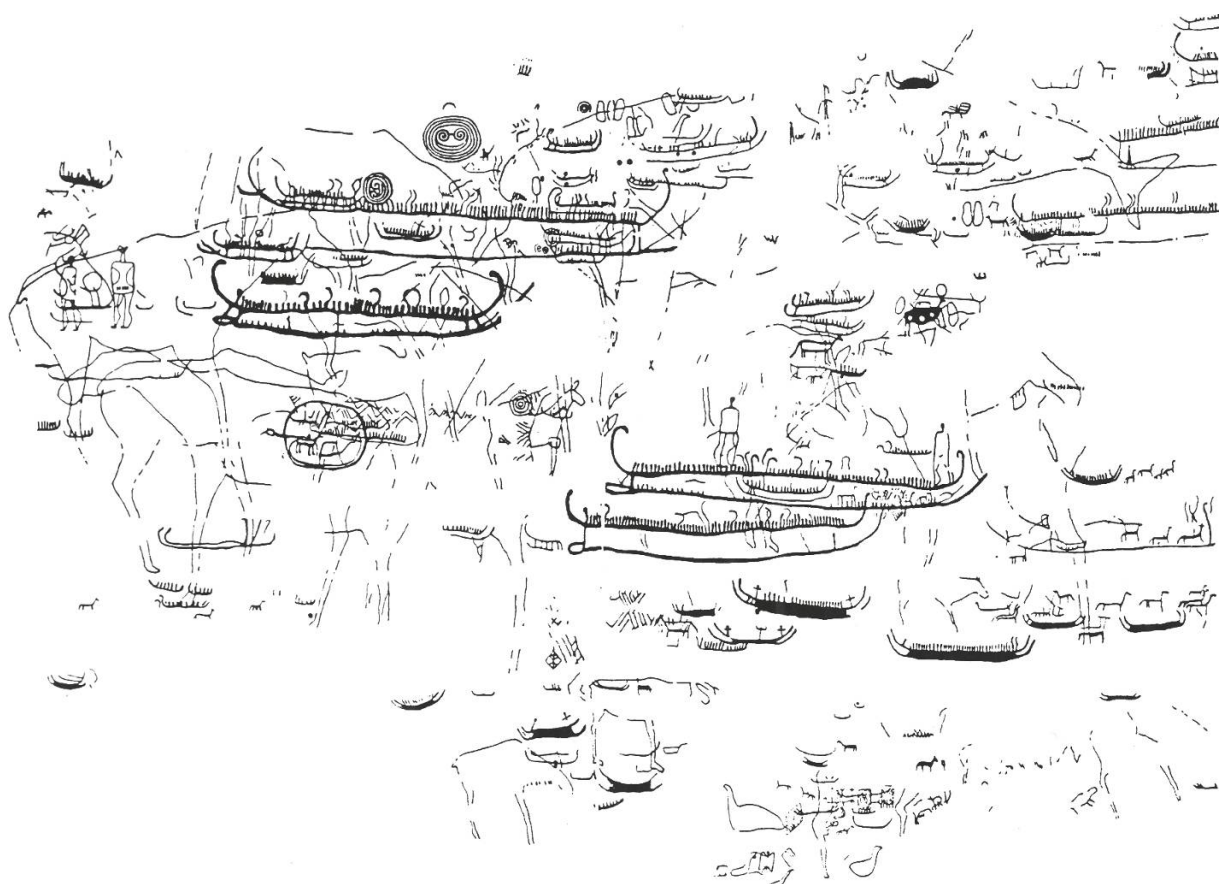


Fig. 8 The magnificent engraving at Bardal, Trøndelag, in Norway (Hagen 1990:77).



Fig. 9 Footprints of the naked foot from the central part of the engraving at Järrestad in Scania. This type of footprint with a marked arch and toes is generally considered to be an older type dating to the Late Neolithic/Early Bronze Age. Note especially that there are at least two different types, one which has a marked arch and another one which is straighter. Both types have form elements that relate to early copper or bronze axes. Rubbing by Catarina Bertilsson, SHFA.



Fig. 10 Central part of the Järrestad panel with depictions of two completely carved, naked and paired feet with toes but without marked arch. The two pairs look somewhat different and the lower pair might actually be a depiction of bear paws, while the upper pair is definitely of human type. Photo: Catarina Bertilsson, SHFA.

Bronze Age and Iron Age tumuli. Although, the share of these monuments being preserved until today has been estimated to correspond to only 10-20% of the original numbers (Lena Alebo and Björn Wallebom, pers. comm. in September 2012), the rest being destroyed by farming, those remaining still give a strong impression of an ancient cultural landscape. The rock carving at Järrestad - one of the most extensive in all Scandinavia - further strengthens this impression with more than 1,000 images having been engraved into the panel. Out of these are approximately 100 footprints, which are naturally the focus of our interest in this study.

Among these footprints the two basic types - the naked foot with toes and the foot dressed with sandals, engraved as a contoured foot with heel line, are both well represented. There are also some hybrids, like contoured feet with toes and some possible bear paws carved into this rock.

The paired feet that could possibly represent the paws of a bear instead of the human foot are the ones displayed in Fig. 9. This interpretation stems from the design of the foot and especially the relation between the length and the width that are different from the majority of the other feet carved here. Even the form of the toes is different making it possible that they are intended to

be claws. A supporting argument is also the fact that bear paws appear on big rock carvings in other places in Sweden, like at Himmelstalund in Norrköping and at Åby in Tossene.

However, a difference between those bear paws and the possible ones at Järrestad is that the former are designed in a much more stylized and schematic manner than the ones at Järrestad, which appear more naturalistic. Consequently, the 'bear paws'-hypothesis needs more thorough analysing and testing before it is completely confirmed. In any case, it is placed in the central part of the panel close to the systematically arranged three axes from the Early Bronze Age indicating a similar date. To the left - here on Fig. 9 - there are two paired and naked feet of human type superimposed by a boat, which were discovered to originally have been composed of two shafted axes during recent documentation work. Close to the bear paws there are also three very distinct cup-marks of which the middle superimposes one of the paws and the other is located very close to the heel of the second paw making it obvious that this is all part of a deliberate composition including the axes and the 'axe-boat'.

The feet displayed in Fig. 10 are of the later type that can be dated to the Late Bronze Age/Early Iron Age based on its design in combination with the imagery context with the horsemen. This is



Fig. 11 Part of the Järrestad panel with engravings of paired contoured feet with a double heel line, two single contoured feet of which one is not completed, two riders standing on horseback and two cup marks. Photo: Catarina Bertilsson, SHFA.

further strengthened by the archaeological context with excavated tumuli at the site with burials from the same era (Söderberg & Hellerström 2003:50-52) This short presentation and analyses of the footprints at Järrestad shows that they have been a central symbol that has been engraved on the Järrestad panel for more than a millennium. The design and manner in which the symbol has been executed varies and could have changed because of different reasons. One obvious reason is the introduction of shoes, as witnessed by the, sometimes distinct, heel lines. However, that could not have been the main reason, instead that ought to have been related to changes in the society and its organization and ideology. But regardless of those changes, the footprints remained a central symbol continuously and repeatedly engraved on the Järrestad panel. And the lack of engravings from the middle of the Bronze Age that can be observed may be the result of a long period of repeated use of the naked feet from the Early Bronze Age. A use that was interrupted and changed by the introduction of the feet dressed with shoes in the Late Bronze Age.

This actually signals that the ideology that ruled the rituals being expressed and depicted in the rock engravings at Järrestad might have been relatively stable and constant during its millennium of use.

Final

The case studies of rock art footprints presented here clearly show that it was a widespread sign and/or symbol in prehistoric rock art. With no claim to be comprehensive, our case studies from Har Karkom, Negev Desert in Israel, Zurla, Valcamonica in Italy, Nämforsen, Ångermanland in Sweden, Bardal, Trøndelag in Norway and finally Järrestad, Scania in Sweden have a wide distribution in space and time. And although there is a possibility of direct contact or overlapping and sharing of archaeological contexts, this may not be the main reason for the choice and use of the footprint as a major cosmological symbol at the respective rock art sites. When we consider this in connection with the dating issue there might actually exist something that we could call 'the common denominator'. And that could be the Bronze Age, if we accept an application of this concept in its widest, most open and indistinct sense as one of those 'historical' constructions archaeologists rely on to build prehistory.

Actually, this definition might make some sense if we look at the different rock carvings in our case studies. We have already seen that Anati (2001) dates the footprints at Har Karkom to that period. However, the engraved footprints at Zurla in Valcamonica seem to fall outside this dating, belonging to the Early Iron Age (Anati

1994). At first sight it seems that Nämforsen is just as problematic a case with many of the engravings having been made before the Bronze Age (Gjerde 2010). But if we accept the hypothesis that the 'foreign' symbols there, like the circle cross and the footprints, were introduced by contacts with southern agriculturalists in the Bronze Age, it strengthens our case. Actually, in his work from 1975, Baudou proposed that the majority of the engravings at Nämforsen were made after 1500 BC (Baudou 1975:147). This becomes even more possible when we consider the Bardal case where the later stratum of carved images obviously belongs to the Nordic Bronze Age. So even if we have pointed to some difficulties for dating the footprints there more accurately, this also leaves open the possibility that they were actually made in that period. There are also examples from Sporaneset in Norway where it seems that the local hunting society adapted the footprint symbol in their rock art (Mandt & Lødøen 2007:254p).

A recent joint Nordic project 'Northern Worlds' aims to describe and analyse the dispersal and influence of the southern farming Bronze Age culture along the northern coast of Norway (Kaul 2011: 72pp). In that connection, Bardal is certainly a key site. Turning to our final site, Järrestad, the concept of the Bronze Age is definitely accurate and unproblematic. Many elements and circumstances make this rock carving unique, elements and circumstances that could help to clarify the key issues we have tried to elucidate in this study of footprints. We are then thinking about the long use of this symbol at this site that could be seen as a good illustration of the *longue durée* of the cosmology of the Nordic Bronze Age (Kristiansen & Larsson 2005:319). It may also be seen as an illustration to the 'three conservative blocs' as suggested and described by Fredell (2003:277). This may actually further confirm our hypothesis that the use and re-use over 5,000 years of the footprint as one of the major cosmological symbols and pictograms in the Bronze Age makes it qualify as an archetype.

An attempt to summarize would look as follows: in order to decipher and understand rock art it is our conviction that we have to study and analyse the specific cultural and material context in which it was created. When doing that, we will discover that similar signs, symbols and images have been created in geographically, environmentally and archaeologically much varied and distant contexts. This could be explained either as a result of complex processes involving societal and ideological elements and forces or as the result of the creative capacity of the human brain in interaction with its physical environment. In both cases, it seems that the resulting prehistoric imagery contains repeated elements that may be described as pictograms and/or archetypes like those we have presented here.

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ROCK ART SHIPS AS A METHOD FOR DATING

Lasse Bengtsson

Abstract: This article will consider some new discoveries of rock art ships found in the course of recording and surveying work in northern Bohuslän in recent years. It has long been known that ships from the Pre Roman Iron Age (PRIA) appear in the Bohuslän material, but for the first time there are also strong indications of the presence of ships from the later period, the Roman Iron Age (RIA). So far, the latest carving seems to date to c. AD 300. In addition, the first ever painted ship has been discovered, found together with carved ships on a vertical rock. The date of the ship is most likely RIA. A recent study of some previously known panels in the area of Häljeröd in Tanum parish pointed to the possibility of a date in the Late Neolithic (LN), and the idea was strengthened by a study of all recorded material in Bohuslän and through comparisons with Norwegian material. Thus, as a result, the period of rock art production in Bohuslän can be, extended by several hundred years.

Keywords: Bohuslän, Iron Age, Bronze Age, Neolithic, boats

Introduction

There have long been attempts within the field of rock art research to create a more accurate tool for dating. This has brought to a large concentration of the studies in the field on chorological and chronological problems, but also sometimes to attain a deeper understanding of settlement history and, more generally, to advance research in the field. Various approaches have been adopted in the absence of scientific procedures, such as radiocarbon, to date rock art, including developing a relative chronology of the ships, where morphological changes have been regarded as following a chronological course (see for example Ling 2008:60). The chronology of ships as a dating method is a rather blunt tool for dating rock art, having a margin of error something in the range of plus/minus at least 100 years. Furthermore, no single chronology covers all morphological traits of the ships. This means that there are numerous uncategorized, in-between shapes and combinations of form elements that fall outside the established chronological or typological system. In addition, the possibility exists that there was a time lag for the rock art carver, who may not have been portraying actual contemporary ship forms, such as in metal ornamentation, or that the rock art was even used as some kind of intentional archaic imaging. Even if this was sometimes the case, we have little choice but to use this tool, such as it is, which has at least been fine-tuned over the last 30 years; not to do so would be to bring source criticism in absurdum. Despite the obvious shortcomings of most ship chronologies there are no doubt that the chronology can be a useful tool for obtaining an understanding of the genesis and history of individual rock art sites. This is particularly the case in a landscape such as Bro parish in Bohuslän, Sweden, where numerous rock art sites are concentrated in a limited area. Here, this type of analysis of individual carvings can be complemented with an analysis of the distribution of different sites in the landscape in order to gain a broader perspective on the role and use of the carvings.

The ship chronologies compiled in the last hundred years have mainly been based on the ships that were depicted on dateable bronze objects. Superimpositions and shoreline displacement (for example Ling 2008) have also been used in the chronological work of rock art. By studying superimposing, i.e. when a ship has been carved over something else, one can obtain a relative date. The problem with superimpositions is that it sometimes is

difficult to determine which of the ships was first and which was superimposed.

While this is not the place to discuss and scrutinize the different chronological ship systems and how they evolved, I would like to mention the most recent addition to the corpus, as it concerns Bohuslän, the main area of my research. Clues for dating are also provided through shoreline displacement, an important supplemental branch of study for refining the ship chronology. In his work, *Elevated Rock Art*, Johan Ling (2008) created the first chronology which specifically treats Bohuslän. He was able to do this through taking thorough measurements at a large number of rock carving sites that would have been close to the shore in the Bronze Age. Ling's chronology confirms and refines already known facts; however, it has the huge advantage of being based on meticulous measurements of shoreline displacement, and not just comparison with other images.

The tradition of bronzes ornamented with ships and other motifs largely disappeared during the Nordic Bronze Age Period V (c. 900-700 BC) which means that most rock art chronologies also end there. However, it was clear from an early stage that certain types of ships, both in Sweden and in Norway (Mandt 1973), were made during the Early Iron Age (500 BC – AD 1). It has been suggested in the past (see for example Ling 2008) that the tradition of carved ships probably was not confined to the Bronze Age; that this is indeed the case that will be shown below.

Ships from the Neolithic

In *Sydvestnorske Helleristninger* Eva and Per Fett (1941) discuss the chronology of ships, among other things, for Rogaland and Lista, Norway. They identify some ship types as belonging to the Neolithic period (Fett & Fett 1941: Pl 82). Their type J (figure 1) has now also been found in Bohuslän. These ships have a horizontal keel line and generally a vertical bow- and sternpost. The bowpost is sometimes curved. In Bohuslän this ship type mainly occurs in Tanum, but there are some rare examples in other places. Ling (2008:101) has suggested that some of the ship types can be attributed to the Late Neolithic (2250-1700 BC) based on the fact that none of these ship types are found under 19 m over present day sea-level. Some of the westernmost ships in Tanum are

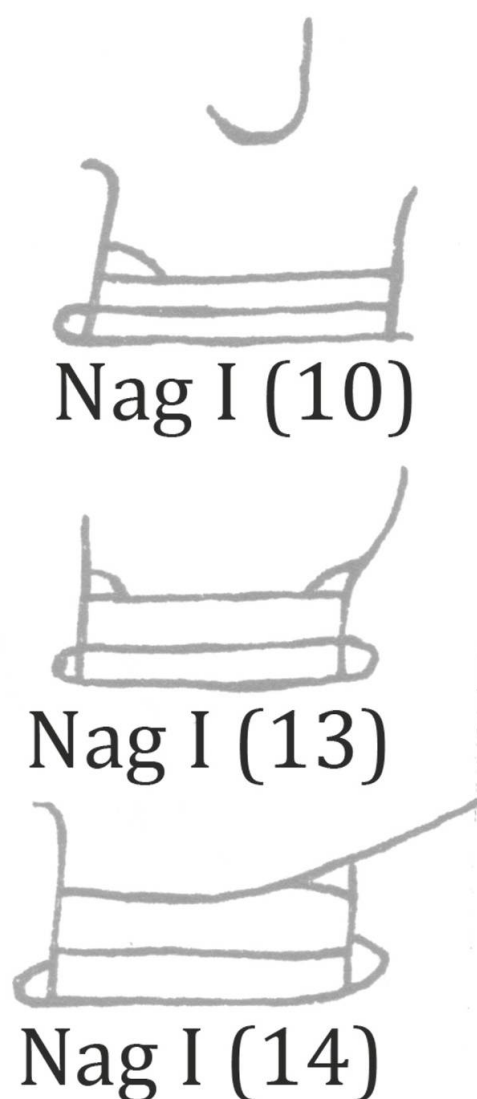


Fig. 1 Fett and Fett's Neolithic ship type J (Nr 13)

of this type, Raä 484:1 and 484:2 (figure 2 and 3). The similarity with Fett & Fett type J is striking.

Kårstad and Hjortspring

Two archaeological discoveries, the Kårstad carving in Norway (Mandt 1973) and the Hjortspring boat from Als in Denmark (Randsborg 1995), have made an important contribution to the understanding that the rock art carving tradition continued into the Iron Age. The Kårstad carving, found by chance in 1927, contains ten complete ships and two partial ones, a swastika and a runic inscription. The runic inscription is of the old futhark type and has been the subject of research resulting in many interpretations and dating attempts. The runes have been dated to the period AD 200-400, although there is no consensus about this date.

Gro Mandt, the researcher who has most thoroughly studied and documented the Kårstad Rock, has divided the ships into three types. She draws on the Hjortspring boat as support for dating the oldest ship types. The Hjortspring boat has been dated to c.

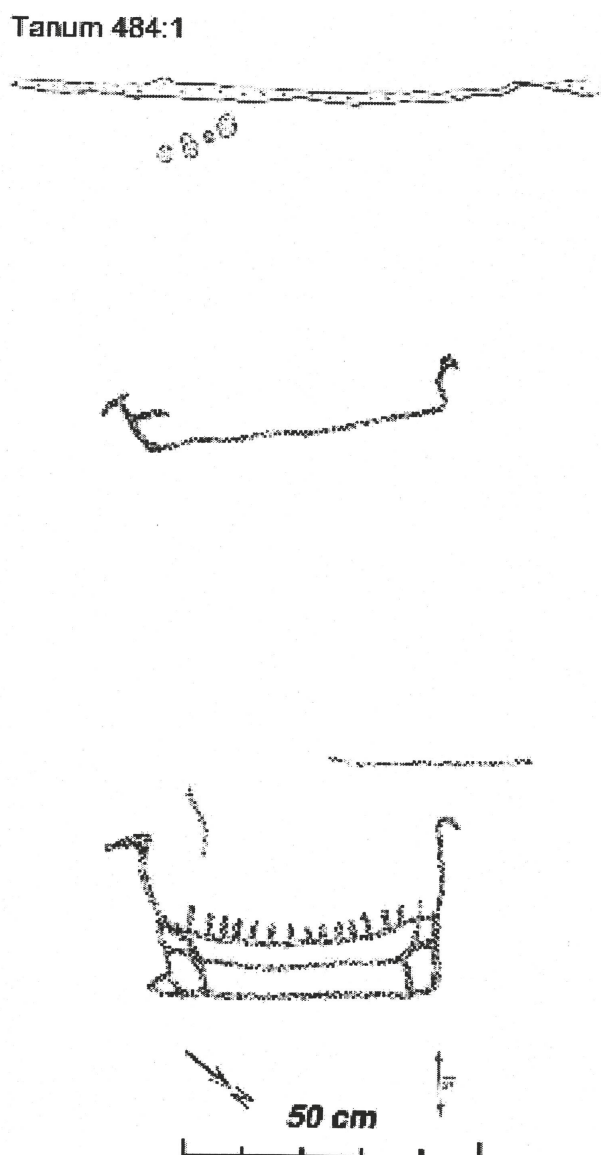


Fig. 2 Raä 484:2 Tanum parish. Lowest ship of Neolithic type, cf. Fett and Fett type J.

350 BC. The excavation of a burial with a standing stone with a ship figure on it in Austrheim in Njordfjord, relatively nearby the Kårstad carving, is used to support the date for the latest type of ships. One of the ships from Kårstad is almost identical to the carving in Austrheim. The excavation demonstrated that the burial could be dated to c. AD 400. The swastika, through similar motifs on bracteates, has been dated to the end of the fifth century or the beginning of the sixth century AD, and this date still holds (Mandt 1973, 2005).

The chance finding of the Kårstad rock therefore contributed to the awareness that, at least in Norway, rock art ships were still being made into the fifth century AD. If one also considers the Gotlandic picture stones with ships, which are almost identical to the carving in Kårstad, then the latest ship type and the tradition as a whole must extend even longer.

The second important find occurred in 1920 with the discovery of the Hjortspring ship. The ship had really been discovered around 1880, but hadn't been reported to authorities. At that time wood

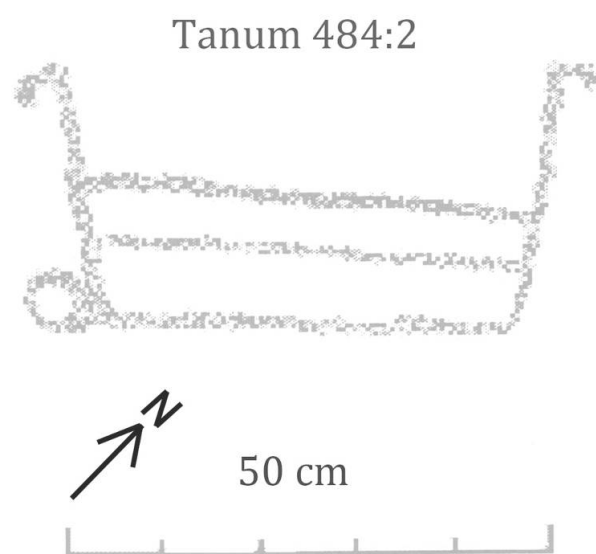


Fig. 3 Raä 484:1 Tanum socken. Ship of Neolithic type, cf. Fett and Fett type J.

from the ship was taken by the farmers and used as firewood. Jens Raben, an antiquarian at Sønderborg Museum, gained knowledge of the find during the First World War, but he chose not to report it to the Museum in Kiel. At that time this part of Denmark was part of Germany and was not reunified with Denmark until 1920. Shortly after the reunification Raben reported his find to the National Museum in Copenhagen. The ship was excavated by Gustav Rosenborg in 1921 and 1922 (Randsborg 1995).

The ship, which has been re-conserved and re-constructed in modern times, is on display at the National Museum in Copenhagen. It bears striking similarities with the Early Iron Age rock art ships, and one need not hesitate to incorporate the Hjortspring boat in chronological discussions. This discovery therefore establishes a clear association between some rock art boats and the Iron Age.

Definitions of Iron Age ships

If a ship chronology is to be an effective and worthwhile tool it must encompass the end of the Bronze Age and the Early Iron

Age. This is the only way one can follow the final phases of the carving tradition and study spatial distribution in the landscape.

The Foundation for the Documentation of Rock Carvings in Bohuslän (Swedish: Stiftelsen för dokumentation av Bohusläns hällristningar) has carried out extensive documentation in Sotenäset and Stängenäset. This work has added c. 1,300 new rock art carving sites, a huge increase in the material. The newly recorded material is available online at www.hallristning.se. Importantly, this additional material has resulted in a substantial increase in the number of rock art ships dating to Montelius Period VI (600-500 BC) and the Early Iron Age (500 BC – AD 1).

It seems that there is a traceable development towards a more symmetrical ship's hull during Period VI. The depictions differ from those of earlier periods, when the bow and the stern on the ship looked different. Another important factor is the total disappearance of the almost baroque horse-head-protome on the stem of ships of Period V. Animal-headed-protomes still exist, but mainly in the form of aquatic birds. There may still be some horse heads, but only in a much more stylized form.

Guidelines for identifying ships in rock art from Period VI and the Early Iron Age are presented in the table below (table 1). The table ought to be considered as a working chronology and should not be regarded as final and definitive since research in this area is ongoing.

The criteria used listed in Table 1 exists in different variants and combinations, but some essential aspects are always present. The main problem for dating Iron Age ships is the total lack of more recent superimposed carvings. The proposed chronology has the same weakness inherent in all rock art ship chronologies, as highlighted above. This, however, is no excuse for not attempting to shed light on the subject.

New finds

Many interesting observations have been made while documenting carvings through the work of Project Rock Art, conducted within the framework of the *Foundation for the Documentation of Rock Carvings in Bohuslän*. This work has shown that ship motifs were carved into the rocks at Bohuslän at least up to AD 300. A clear example is seen in the three ships on Raä 26:3 in Brastad parish (Figure 3). The ships are clearly of Nydam type. The Nydam ship has been dated to c. AD 300 (Sognnes 2011:51). The ship seems

Table 1.

- i) Many of the ships have a protrusion, usually in the bow or the stern. The function of the protrusion is not known, and there are no convincing theories or suggestions as to its deeper significance in relation to the ships.
- ii) There are no pictorial scenes depicted on the ships. This is a big difference from Period V, where there are a number of ships with images such as horses, hieros gamos, human figures wearing weapons and acrobats, etc.
- iii) The crew strokes on the boats are often missing on the Iron Age ships. Human figures are also very rare during this period. When humans are depicted they often have their arms raised, but do not appear to be holding anything.
- iv) From Period VI onwards some of the ships have a rudder at the stern. During the Early Iron Age there are some cases of boats with two rudders, one at the bow and one at the stern. The bow rudder seems to disappear over time.
- v) At the beginning of Period VI the ships become symmetrical, i.e. the same at the bow and the stern. Symmetrical ships existed in the Urnfield culture in central Europe at this time, called *Sonnen* or *Vogelbarken* (Wirth 2006), but they do not portray Nordic ships. Horse-heads and aquatic bird-protomes disappear completely. With the exception of the protrusions the bow- and sternposts lack ornamentation. One can say that the filler is gone, replaced with strictly functional traits. This could indicate that ships had a new role in society, which is also suggested by the fact that oars started to replace paddles.
- vi) Symmetrical plank-built ships of Nydam type.

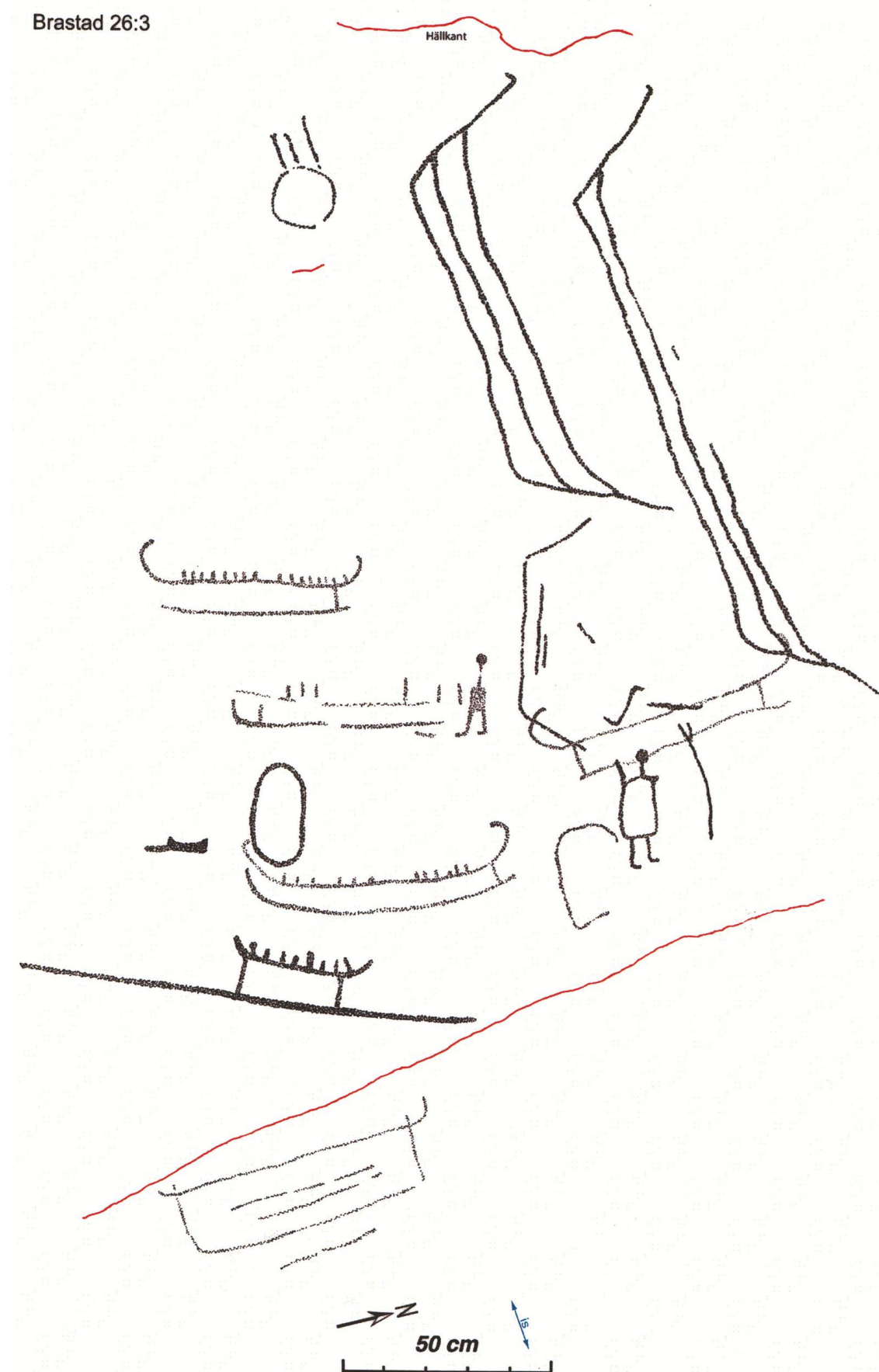


Fig. 4 Raä 26:3 Brastad parish. Three ships of Nydam type. Two of the ships possibly partly carved over ships of Early Bronze Age type.

Tossene 9:1

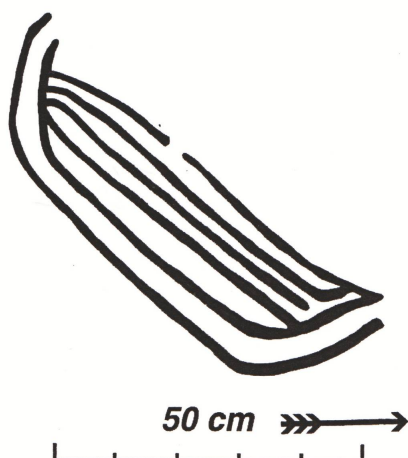


Fig. 5 Raä 9:1 Tossene parish. Ship with marked strake. Possibly somewhat more recent than the other ships of Nydam type.

to be made of planks and lacks masts, and there are no rowers or human figures. Two of the ships are superimposed on Early Bronze Age (1700-1100 BC) ships. The carving site contains more ships from both the Early Bronze Age and the Pre-Roman Iron Age (500 BC – AD 1). The ship dating to the latter period seems to have been placed on some sort of stand. This site is one of many rock carving sites demonstrating that prehistoric people returned to old carving sites over a very long period.

Another good example of the Nydam-type ship is on Raä 9:1 in Tossene parish (figure 5). The ship is on pedestal but does not have prominent bow- or sternposts. This ship could actually be even more recent than the ship from Brastad, but as it is an isolated example and there is no superimposition, this idea must remain only a possibility for the moment.

A couple of years ago there was an interesting discovery of a painted ship in Lyse parish (Raä 142:1). This ship is on a vertical cliff that is protected by an outcrop. The painted ship is surrounded by carved ships of Bronze Age types. The carvings have been known for over 100 year and are officially registered and recorded. There is some modern graffiti on the cliff, such as years and names. The ship is painted over a Bronze Age type ship and the painting has a superimposed carved heart. Despite the long known history of the site no one saw the painted ship until recently. The ship was painted directly onto the cliff, it was not first carved and then painted. Its profile shows that it is a late type of ship, but probably not as late as the Nydam type. A more reasonable date for it would be early in first century AD (Figure 6, see also www.hallristning.se under Lyse parish for colour pictures).

In the light of those evidences we can clearly say that the tradition of carving ships onto rock continued not only into the Pre-Roman

Lyse RAÄ 142:1

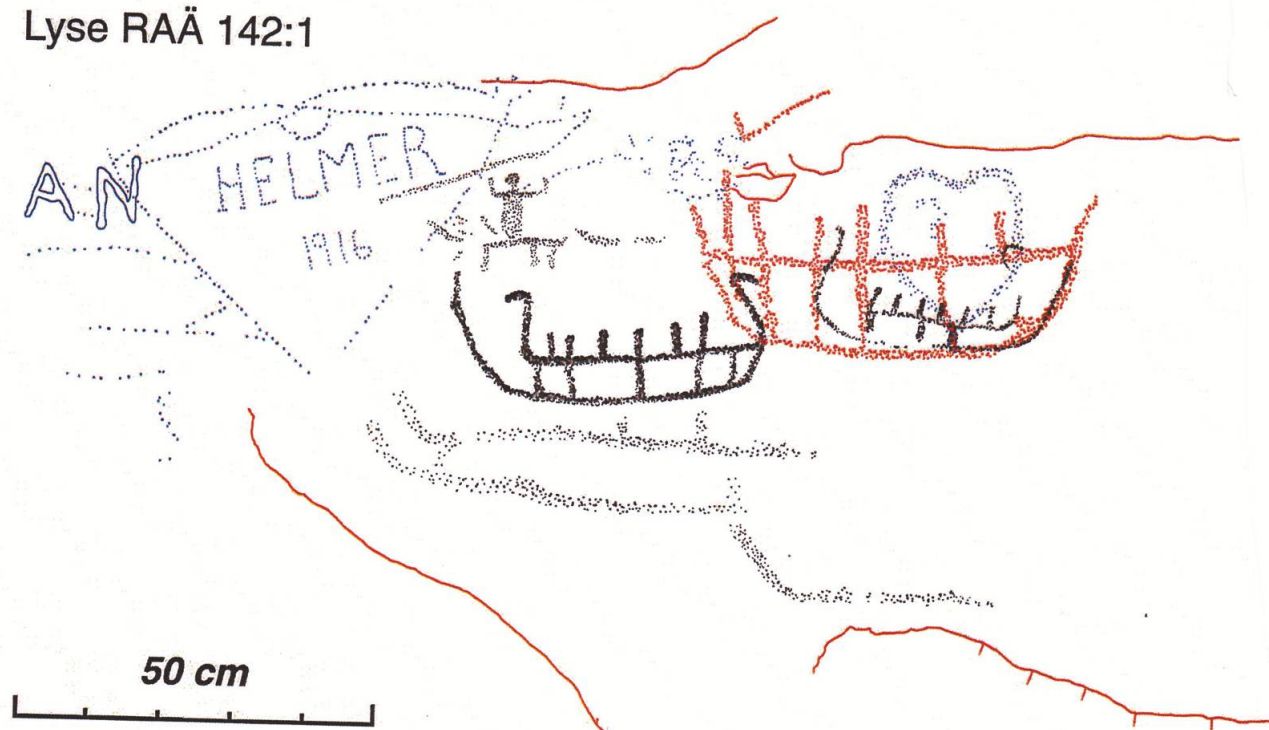


Fig. 6 Raä 142:1 Lyse parish. Painted ship, probably somewhat older than the ship of Nydam type. The ship is on the same panel and partly painted over ships of Bronze Age types. The ship is painted not carved.

Iron Age, but at least to AD 300, possibly even longer. Such conclusions explain the sixth and last chronological criteria in Table 1.

Conclusion

This article has shown that the rock carving tradition in Bohuslän is much longer than most researchers have previously believed. The extensive research and documentation of rock art in Bohuslän in recent years has identified ship carvings from the late Neolithic into the Roman Iron Age, and there are some indications that this tradition might be even longer. This opens up the possibilities for new perspectives in future rock art research. However, continued documentation of rock art and use of as many chronological indicators as possible are needed to firmly secure this hypothesis.

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ROCK ART, AGENCY AND SOCIETY

Per Cornell and Johan Ling

Abstract: For most of the twentieth century the rock art in West Sweden, or more precisely the county of Bohuslän, has been seen as a manifestation of an agrarian 'cultic' ideology in the landscape. In this context the dominant ship image and the armed humans have been perceived as abstract religious icons, not as active symbols relating to real praxis in the landscape. Moreover, some scholars claim that the rock art medium was utilised primarily by society's elite. In this paper we intend to challenge some of these ideas. We will instead argue that rock art had an active function, and that some of the depictions may have worked as 'secondary agents' in the landscape. The general maritime location and content of the images, and the dominant masculine representation of armed humans associated with the ships, are important elements. By taking this approach, we are following Kristian Kristiansen in his efforts to discuss social dimensions of the Bronze Age in Scandinavia.

Keywords: Maritime Rock Art, Secondary Agency, Social World, Elites, Figurative Rock Art

Introduction

This study follows Kristian Kristiansen (1987, 2006; Earle & Kristiansen 2010) in his stimulating attempts to shed light on social dimensions of the Bronze Age in Scandinavia. It mainly draws on material from West Sweden, or more precisely the county of Bohuslän, but also touches on other Scandinavian rock art sites and regions. This particular example is interesting since it illustrates key problems in addressing certain questions of social theory and archaeology.

Chiefs, goods, commoners, farmers, pastoralists, Indo Europeans, druids, metal smiths and warriors: words such as these abound in the major interpretative frameworks dealing with issues of agency and rock art in Bohuslän. However, few studies have focused on the praxis and the format itself, that is the context of the panels (the maritime landscape/seascape), the material (the materiality of stone) and the content of the images (ships and humans in antagonistic poses). During the twentieth century there was a tendency to picture rock art in Bohuslän within a cultic agrarian ideology, whereas the dominant ship images and the armed humans were perceived as abstract religious icons, not as active symbols relating to real praxis in the landscape (Almgren 1927; Ohlmarks 1963; Gelling et.al. 1969; Fredell 2003). Figurative rock art sites can be found in various parts of Scandinavia, but it is interesting to note that while they occur frequently in coastal areas, they are less common in areas with favourable conditions for Bronze Age agrarian activity. Such agrarian areas are remarkable for their high density of Bronze Age barrows and bronze items. This is true for e.g. South Halland, Scania, Västergötland, the Kronoberg area in Småland, and Jutland, Zealand. So the question is, if the rock art ship and the armed humans were mainly linked to agrarian praxis, why is it that they do not occur nearly as frequently in the typical Bronze Age agrarian landscapes?

The coastal region of Bohuslän boasts one of Europe's largest concentrations of prehistoric rock art dated from about 1700 – 300 BC; about 1500 figurative sites have been recorded (Ling 2008). The majority of rock art depictions in Bohuslän were created in locations close to the shore during the Bronze Age, and ship images dominate the panels (Fig. 1). Different types of images seem to have been located at different places in the landscape (Fig. 2). The general maritime location and content of the Bronze Age rock art are therefore very important for comprehending action



Fig. 1 Southern Scandinavia with the rock-art region Bohuslän marked in grey and a ship image with its 'warlord' and crew from the Tanum area

and rock art. Thus 10,000 depictions of ships far outnumber the so-called agrarian scenes, some 30 plough-and-wedding scenes. In the following we will argue that rock art, in the Bronze Age society of Bohuslän, constituted an active medium connected to certain praxis in the landscape.

Regarding the South Scandinavian Bronze Age, recent literature portrays a set of chiefdoms, with a relatively high degree of similarity in terms of social organization, religious beliefs and cosmology (Kristiansen 1998; Kaul 2004; Artursson 2009). In the early rock art human depictions were collective and anonymous, and figured simply as crew strokes on the ships. But about 1400-1200 BC armed anthropomorphic beings appear on the rocks,

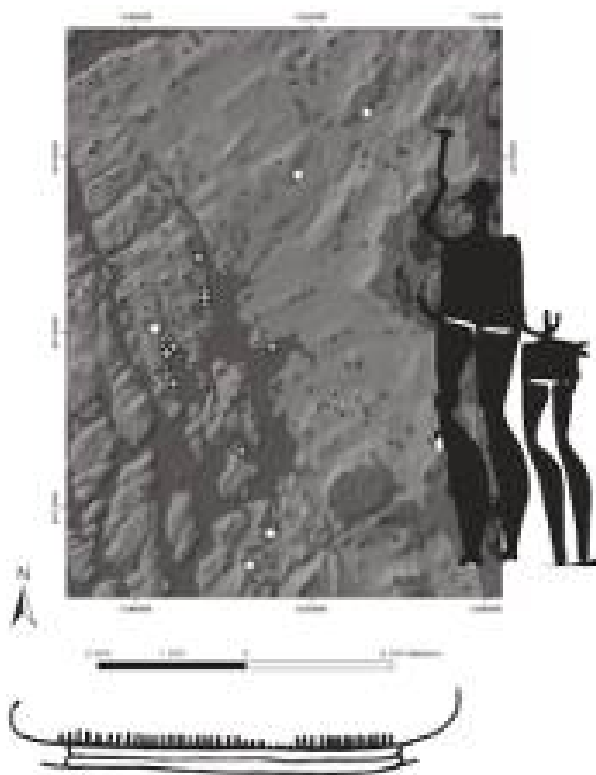


Fig. 2 Map showing the distribution of oversized humans and large ship localities in Tanum during the Bronze Age with a sea level about 15 masl. Note that the large humans tend to have been depicted on higher ground (white dots), while localities dominated by ship images occur closer to the coast (ring-cross dots).

literally introducing a new dimension to the picture. It has been argued that rock art displays norms of social inequality and this, in turn, has been taken to indicate that it was a symbolic tool used by the elite (Kristiansen 1998, 2004; Fredell 2003; Bengtsson 2004; Kristiansen & Larsson 2005). Another familiar theme in Scandinavian rock art studies revolves around the idea that the anthropomorphic images, visible in some panels, primarily represent gods or divinities, and that these deities played an important social and cultural role in Bronze Age society (Fredell 2003; Odner 2006; Kaliff 2007). While there are some interesting ideas in these approaches, we believe it would be even more fruitful to investigate the intricate relationship between rock art, praxis and society. However, in order to develop this discussion it is necessary to address some theoretical issues.

Art and agency

Theories of action and agency have a long tradition within philosophy and social science (cf. e.g. the classic works of Weber, Marx, Habermas, Giddens, Bordieu, to mention just a few). Agency perspectives have also been central in archaeology ranging from collective and deterministic perspectives to more liberal and individualistic ones, but also integrating ideas of non-human agency (e.g. Dornan 2002; Normark 2006; Ling & Cornell 2010). There is no need to dwell on this debate, which would be far beyond the scope of the article, but it is helpful to consider the work of two scholars in particular, Raphael and Gell, who wrote about agency in art and society. Of course, this is not intended to

endorse their general theoretical frameworks (cf. for critical views, Chesney 1991; Lewis-Williams 2002; Osborne & Tanner 2007).

Max Raphael, an art historian working on Paleolithic material, argued that the act of representation was primarily an active social operation, not a passive religious declaration or a simple illustration of nature (Raphael 1945). It rested upon innovative and creative premises that in turn were dependent on specific historical, societal, individual and physical conditions. According to Raphael, the main purpose, force and quest of art were about the creation of values. Raphael's notions regarding antagonism and conflict were also rooted in the spatial, formative, asymmetric and mobile conduct of the paintings, for example in the clustering, superimposition, positioning, opposition and utterances of the animals. The way these forms, structures and contents were applied was considered an implicit way of manifesting the existing social and sexual constraints and conflicts between groups and individuals; sexual drive, struggle and death, propitiation and dissection.

Raphael stressed that groups with a mobile praxis depicted images and compositions in a mobile way in contrast to groups living a more sedentary praxis. Thus compositions made by groups with a mobile praxis (such as the Paleolithic hunters or warriors and sailors from ancient Greece) never have a firm baseline; instead, the images float or drift on the panels. The overall impression of these highly mobile compositions is conveyed by the superimpositions and oppositions, manifested as general expressions of motion. Raphael's notions are interesting, despite some theoretical and empirical shortcomings (Chesney 1991).

In the same spirit as Raphael, the anthropologist Alfred Gell argued against the conventional art historical perspectives focusing on symbolic meaning and aesthetic perceptions. In its place Gell wished to stress *agency, causation, result and transformation*. Art is, according to Gell, a 'system of action intended to change the world', and should not be looked at merely in terms of coded symbolic propositions (Gell 1998: 6). He further argued that humans use artefacts and images as a kind extended agency, in his terms 'secondary agents', and through these realize their intentions. According to Gell, the secondary agency must always be understood in relation to human praxis. Thus, the material, the image, has no life of its own, and no ontology nor an independent agency. Gell gives several examples of how features which have been interpreted by means of aesthetic perceptions as merely 'religious' or 'aesthetic' symbols actually operated as active social symbols. This can for example be seen in the carvings on the canoe prows of the Trobriand Islands, which had a function way beyond aesthetic interest or symbolic meaning. The carvings on these war canoes worked actively as 'secondary agents' in the psychological warfare in the competitive kula – exchange.

Overcome with awe at the magical powers inferred to be at the disposal of the canoe-owner by virtue of the captivating power of the prow-decoration, the viewers of such imagery were expected to lose hold of normal wits, and trade their kula-shells at less than their true value (Osborne & Tanner 2007: 3)

Likewise, the depictions of anthropomorphic beings on the shields used by hoplite warriors, traditionally seen as passive symbolic or aesthetic representation, rather worked as 'active secondary agents in frightening the opponent in battle', according to Gell (1998: 6). Thus, what is in focus is an active social process, and even alteration, transformation and change of a social setting (cf. Malinowski 1922: 105; Petrovic 2003: 12-17).

In the context of rock art and agency Kristian Kristiansen (2004) and Frode Kvalø (2004) have, for example, argued that rock art may be a medium displaying how Bronze Age chiefs built, crewed and launched ships for major sea ventures. Kvalø also explores the idea that during the Bronze Age the ship was a social institution, and social formations were shaped based on maritime principles. Thus leaders exercising control of prestige goods were dependent on this social and technological institution for achieving long-distance exchange (Kvalø 2004). Moreover, some scholars have pictured the rich rock-art sites in Bohuslän as chiefly religious centres (Kristiansen 1999; Kaul 2004). Bengtsson has suggested that elites produced and used the figurative rock art, while cup marks were produced and used by commoners (Bengtsson 2004). Coles (2005) favours a similar idea, and proposed that 'girots', old and experienced wise men, women or others, could have made rock art.

An interesting detail if this argument were to be accepted is that the figurative rock art occurs considerably less frequently in certain areas, e.g. Västergötland, south Halland, Jylland and Sjöland. These areas, however, exhibit large monumental graves and elaborate bronze items. These latter features are generally used to define the presence of a BA elite (Ling & Cornell 2010). Thus, the evidence is contradictory. The rock art depicting elite matters appears in regions where other indicators of an elite are scarce, and vice versa. We are probably dealing with different kinds of social logic and social stratification.

Summarising this traditional perspective, disregarding some important differences among the quoted authors, Bronze Age Bohuslän has been pictured as a chiefdom-based society in which religion, and particularly anthropomorphic deities, depicted in the rock served as a major 'ideological' vehicle or tool for agency within the institutionalised elite.

Other approaches on rock art and agency

In the debate on the Scandinavian Bronze Age, not all authors argue for a connection between the elite and rock art. Quite the opposite, Hauptman Wahlgren (2002) and Thedéen (2004), for example, relate rock art to communal initiation rites made by local families or kin. Similarly, Earle has argued that rock art lacks many requisites for being a suitable tool for the making of chiefs. It is not monumental, it is widely spread in the landscape, and it is hard to control access (Earle 1997, 2002 pers comm. 2005). These voices do point to severe problems in the chiefdom-elite religion model, and a fresh approach must take their arguments seriously.

Another relevant question is the gender of these figures. According to a general view, about 90–95% of the human images demonstrate masculine traits (cf. Nordbladh 1989: 325; Yates 1993; Bengtsson 1999: 311). In this light, Tim Yates (1993) suggests that rock art may demonstrate male pubertal rites, stressing the stylistic awareness of the male body. The presence of weaponry may possibly be linked to these schemes. However, while the question of gender in rock art is of great importance, it requires a more elaborate review and analysis for further discussion.

Goldhahn has launched a somehow different view, arguing that the metal smith and the rock art 'smith' could have been related to the same social institution as ritual specialists (Goldhahn 2007). There is, in fact, some empirical evidence to support such an argument; clear traces of metallurgical activity have been found adjacent to some rock art sites (Goldhahn 2007; Ling & Ragnesten 2009). Moreover, the correspondence between some images in the rock

and certain bronze items could (cf. e.g. Kaul 1998), possibly, speak in favour of the argument. However, one doubts whether a relationship between rock-pecking/metal-production can account for all rock art sites, still less for all the dimensions of rock art.

Brian Hayden (1995) has elaborated upon some concepts and ideas about social formations and social agents that may be interesting to consider in this context, not least regarding the Bronze Age in Bohuslän, and we now turn to some of his reflections.

Aggrandizers, agency and rock art

Hayden saw the limitations in projecting general evolutionary anthropological schemes upon prehistoric societies and detected nuances in North American archaeological material that did not seem to fit these models. He conducted a new, archaeological analysis of ethnographic accounts of transegalitarian societies and focused on specific social and economic causes of social and individual action and power.

Hayden's concepts of 'aggrandizer' and 'entrepreneur society' (e.g. Big Man society, Hayden 1995: 18) help to qualify the concepts of chief and chiefdom (Hayden 1995: 18). In entrepreneur societies, the societal level that precedes a chiefdom, inherited positions of skill, knowledge and power may exist among the elite fractions (Hayden 1995: 52). This has some similarities to a chiefdom, but whereas heredity is an institutionalised feature in a chiefdom, it is less so in entrepreneur societies (Hayden 1995: 63). Thus, while some entrepreneur societies display very complex stratified and societal forms, not far from those traditionally assigned to chiefdoms, they are not as stable and predictable as chiefdoms, but more fragile and open to competition (Hayden 1995: 53, 58). It could also be added that the aggrandizer *needs* no formal political institution in order to operate. The general mechanism behind the social inequality in these societal forms is considered to be manipulative strategies and actions performed by the 'aggrandizer' (Fig. 3), a figure with an aggressive and acquisitive character who is engaged in surplus production of self-interest in order to attain more influence and power in society (Hayden 1995: 18).

Aggrandizers were also engaged in the acquisition of knowledge and information about craft specialisation. Moreover, investments in cult were devised and executed by aggrandizers and manifested by elaborate grave monuments or cult houses as tokens of the descendants' power. This trait became even more pronounced in chiefdom societies, where the aggrandizer or chief claims a 'divine' right and position in society with reference to ancestors, animals and distant others (Hayden 1995: 63, cf. Larsson 2002). Apel has applied some of Hayden's ideas. In his discussion on the production, exchange and consumption of flint daggers in Scandinavia during the Late Neolithic Apel (2001) stresses that flint daggers may have been produced in an apprenticeship system where knowledge was transmitted by exclusive initiation rites geared by 'aggrandizers', who also controlled the local and long-distance production and consumption of daggers.

Large community-based competitive feasting, such as 'potlatch', are also seen as a typical trait of entrepreneur societies as a means of attracting supporters and uniting and organising society. In chiefdoms, the competitive feast is removed from the communal arena and restricted to elites. According to Hayden (1995: 15), however, competitive feasting may also have included lower-level elites in chiefdoms, which is interesting in the light of rock art and will therefore be considered later.

Finally, small raids, the exploitation of slaves and territorial conquest are primarily features of a chiefdom, though Hayden (1995: 52) notes that elites among coastal corporate fishing groups (Kwakiutl and Haida) on the north-west coast of North America had slaves and conducted recurrent raids for more slaves to maintain and increase production, profit and prestige. While this trait tends to be typical of chiefdoms, it is noteworthy that the corporate coastal groups were using the typical entrepreneur forms of strategies to generate surpluses, such as marriage-wealth exchanges and competitive or reciprocal feasting.

Whether chiefs or entrepreneur aggrandizers are suitable models for discussing Bronze Age society in Bohuslän is indeed a difficult question to discuss. Both models are rather general and a bit square. They also suffer from being all too much based on particular ethnographic contexts, and on information from first-hand informants, which is not available for Bronze Age Bohuslän (cf. Godelier 1999). Furthermore, they only address very particular aspects of social forms, mainly related to authority or politics in a kind of Weberian framework. While political authority is an important factor (cf. Smith) other relevant aspects must also be taken into account. Looking at the evidence, both burials and rock art seem to indicate that Bronze Age societies in Bohuslän were stratified (cf. Ling 2008: 219-220). However, the archaeological material definitely does not indicate that either an inherited institutionalised chiefdom or the classical 'entrepreneur' form prevailed at that time in northern Bohuslän. Still, in our opinion, elites, aggrandizers and complex stratified societies did exist, but these formations were fragile and varied, not formally or officially based or structured on a system with a hereditary principle (cf. Kristiansen & Rowlands 1998; Earle, this volume).

In any event, the burials point to a stratified society and the pertinent question here is not which specific form existed, but rather whether or not the rock art medium was utilised primarily by society's elite few. It has been argued that the rock art seems to display norms of social inequality and this has traditionally been taken to indicate that it was a symbolic tool of the elites (Kristiansen 1998; Fredell 2003; Bengtsson 2004; Kristiansen & Larsson 2005). However, there are many indications contradicting this view. If we take the notions of elites, aggrandizers and chiefs as accounted for above and try to integrate rock art in an elitist structure, one would expect the rock art to have been a strictly controlled, private, closed, spatially limited, socio-material phenomenon (Godelier 1999). For Bronze Age Bohuslän the opposite seems to have been the case.

Maritime praxis and secondary agents

Most of Bohuslän's rock art has an open, communicative, coastal location. Moreover, the general, innovative and mobile conduct of the rock art does not agree with the normative ideologies connected with Bronze Age elites (cf. Kristiansen & Larsson 2005). In this respect the rock art panels do not seem to provide the spatial, expressive or social conduct or criteria of control or privacy that chiefly agency demands. They seem to reflect 'public' rather than 'private' or restricted affairs. There are other monuments or items, such as cairns, stone-settings, barrows and bronze items, which seem to come closer to 'chiefly' demands of closeness, control and privacy, so perhaps it would be appropriate to relate those to chiefdom agencies. It is notable that Timothy Earle (pers. comm. 2005), one of the most quoted authorities in discussions of chiefdoms, clearly disregards rock art as a chiefly medium, preferring not to associate it with the elite. Bearing this in mind, it is tempting to relate rock art to more communal affairs,



Fig 3 'Aggrandizer'/fighter depicted on higher ground away from the sea in Bohuslän.

such as competitive feasting and marital, pubertal and initiation rites. Such a hypothesis is supported by both spatial and expressive social traits of the rock art, such as the panels' openness and general innovative and mobile nature.

There are, however, other rules of conduct that favour a more confined agency regarding the production and consumption of rock art, such as the general maritime location and content and the dominant masculine representations, with warrior attributes related or connected to the ship images (cf. Nordbladh 1989: 325; Bertilsson 1989; Yates 1993; Treherne 1995; Bengtsson 1999: 311, Bradley 2009). But gender issues are complex, and there is an urgent need for a more refined discussion on this issue (cf. Bergerbrant 2007 for some discussion). Regarding the concept of 'aggrandizer' it would be tempting to associate it with the abnormally large warriors depicted on higher grounds in Bohuslän.

The rock art in Bohuslän has traits that may reveal the agency of a special task-oriented group. In terms of the location of rock art in Bohuslän, and its structure and content, the following characteristics are most prominent:

- a coastal or maritime location
- ships
- performances in or connected to the ships
- figures with martial equipment

A tempting assumption in this context is that at least the rock art located close to the sea may have been produced in accordance with maritime 'initiation' rites (into particular knowledge and skills), that is, rites for maritime tasks such as sea ventures, involving maritime skills combined with martial arts. In that case, ship images with a kneeling crew, or one that is sitting or performing actions or poses such as raising paddles or weapons or blowing lures, may represent social relationships, staged in special social forms (Fig. 4).

Could rock art reflect one of the resources that maritime groups or individuals may have used to reproduce and reinforce ideals

about their actions and positions in society? Such as upcoming aggrandizers and warriors? A maritime medium that was only partly open to change and control in relation to the social order and to certain strategies since it was constantly subject to the counter-strategies and manipulations of competing individuals. A case in this context would be the large rock art depictions of warriors on higher grounds (Fig. 2).

Discussion and conclusions

In order to solidify the ideas about rock art and secondary agents, it is useful to envisage art as praxis in the landscape. The majority of rock art ships were made at maritime locations in Bohuslän in the Bronze Age and on these panels the human representations seem to be more or less in proportion to the ship images. However, on higher ground, away from the shores, the human figures were made abnormally large in relation to the ship images (Fig 2.). This spatial variability is probably of great significance. Looking at the panels in the maritime zone itself, it is tempting to assume that some of the rock art in Bohuslän has been produced in accordance with maritime, martial 'initiation' rites (into esoteric societies or into knowledge and skills). That is, it was created for use in rites relating to maritime tasks such as sea ventures, which involved maritime skills combined with martial arts (Ling 2008; Bradley 2009; Ling & Cornell 2010). There are ship images with crews that are kneeling, sitting or performing actions or poses such as raising paddles, weapons or blowing lures, possibly presenting social 'initiations', staged on the rock (Fig. 4).

Perhaps these representations worked like 'secondary agents' and in this case illustrate social entities of different ranges and functions. Individual social action and collective action at different levels and in different settings and aggregations, ranging from the household to the crew of a ship, were all of social relevance to the Bronze Age society of Bohuslän. But not all are visible in the social world depicted. In the lower maritime land the ship is of major importance. This would have been the spatial framework for collective maritime aggregations and interactions, represented by the 'collective' ship depictions. On the higher ground, abnormally large humans in relation to the ships are presented, which, on the other hand, indicates a space in which more individual actions and positions were of great importance (Fig. 2). Based on their location, it may be appropriate to label the large anthropomorphic depictions on higher ground as 'aggrandizers'. The latter form of representation may even have actively communicated the message that certain individuals had some kind of control over ships, at least in the process of building, crewing and launching, but perhaps not in the same way when at sea. Heavy maritime labour such as the building of ships, long-distance travel, maritime fighting and deep water fishing, must have been dependent on other levels of social organisation, such as the household. In a sense the ship may have been a collective emancipator and a unifying feature, but also, at the same time, a demanding and alienating feature, and even uncanny. Thus, there may have been certain dynamics, expectations and conflicts between the individuals and groups positioned in or transferring between the terrestrial and maritime spheres and these dynamics may have included certain social conceptions and actions about gender, groups or individuals. The armed beings in antagonistic poses might then have been an element in social strategies. Moreover, the strong presence of the ship in the rock art denotes the significant and evocative role it played in society. Rock art in Bohuslän manifests the maritime groups or individuals, their ideals, actions and position in society. Pecking in the rock was a medium partially (but only partially)



Fig. 4 The elaborate rock art panel from Skee 1539, northern Bohuslän, displaying the crew of a ship in various poses, including kneeling, sitting or raising paddles, or weapons (documentation Broström and Ithrestam, Vitlycke Museum Archive VM).

open to control and alteration, used for strategic purposes, probably not entirely conscious, but at times directly intentional.

In keeping with Raphael and Gell and their emphasis on agency, causation, result and transformation, the rock art could have served to accentuate and manifest the agency of the maritime social world and the generic code of fighting and even, to some extent, make this ideology more dominant. This could explain why ship images were depicted so frequently in the landscape, and even on higher ground away from the sea, together with other rock art images. This analysis therefore points to rock art as praxis and medium relating to group action, rather than 'chiefly' individual agency.

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ROUND AND ROUND WE GO – WITH CONCENTRIC CIRCLES

Flemming Kaul

Abstract: A significant number of Bronze Age rock carvings have been discovered recently on the island of Bornholm in the Baltic Sea. Particular attention will be paid to a site on northern Bornholm where a concentric circle motif is surrounded by stylized ship images. Examples of rock carvings with concentric circles from Scotland, Spain, northern Italy and Scandinavia are mentioned.

This Bornholm site with concentric circles is situated on the Hammersholm plateau high in the landscape, overlooking other rock carvings closer to the sea, indicating the importance of intervisibility. Here, on northern Bornholm, the rock carvings were not made just at the shoreline such as has been shown to be the case on the Swedish Bohuslän coast. On Bornholm, it is observed that the setting related to the best agricultural land as well as the sea and the best landing places.

Taking a wider geographical perspective, the study also considers the relationship between the rock carvings of northernmost Bornholm and those of the east Scanian (Swedish) Österlen coast. The promontory of Stenshuvud, Österlen, Scania, and the promontory of Hammeren, on the north-western tip of Bornholm, should be regarded as landmarks connecting the two areas.

Keywords: Rock carvings, concentric circles, ship images, landscape archaeology, landmarks, sacred landscapes, Bornholm, Österlen

Introduction

As Professor in Archaeology at Gothenburg University Kristian Kristiansen has actively encouraged his students to work with the rock carvings of the Bronze Age. He has faithfully emphasized the necessity of viewing the Scandinavian rock carvings not as 'isolated pieces' of prehistoric art, but as parts of a larger cultural context. In his own research he has stressed the religious or mythological content of many rock carving motifs (most recently Kristiansen 2010). It is a pleasure in this Festschrift to present and discuss some recent finds of rock carvings on the Baltic island of Bornholm.

Rock carvings of northern Bornholm

Since 2000 the number of known rock carvings on Bornholm has increased dramatically. In collaboration with amateur archaeologists *Bornholms Museum* and *Nationalmuseet* has made a targeted effort searching for and documenting rock carvings, and a large scale excavation project has been carried out, financed by the Danish Research Counsel for the Humanities, focused on the Madsebakke rock carvings, the largest Danish rock carving field. The excavations have revealed traces of ritual activity before, during and after the period when the rock images, mostly ships, were made (Kaul 2006a; Sørensen 2006). Seen from this perspective, the creation of rock carvings was just one activity, albeit a remarkable one. Consequently one could in some cases 'turn around' our perception of the rock carvings. A given rock or rock surface was not necessarily sanctified through the making of the rock carvings: on the contrary, the rock carvings were made because the rock had been sanctified through various ritual acts already carried out. We can observe how natural features of the landscape were gradually transformed into cultural monuments – from nature to culture. Crevices and hollows of the rock were filled up with material of different kinds, including pottery and burnt wattle-and-daub, rock carvings were made, fire was kindled, fences and walls were built, stones were packed together and stone pavements were laid and, in some cases, parts of the rock were covered or hidden by stones. Some parts of the Madsebakke rock were covered with stones so that the rock from certain angles would appear like a man-made cairn. The creation of the rock

carvings was obviously just one part of a long ritual process (Kaul 2006a).

It is particularly in the areas at Allinge and Sandvig on the northernmost part of Bornholm, close to the marked promontory of Hammeren and Hammer Odde, that a significant number of rock carvings have been found recently. The high plateau of Hammersholm with a splendid view over the Baltic Sea and Hammeren should be highlighted. A few years ago Hammersholm was unknown as a rock carving area – now more than 10 rock carving fields with ship images have been found, plus a larger number of sites with cup marks and other motifs. Also, some interesting rock carving sites with ship images have appeared recently closer to the coast, though not at the shoreline itself, and still on higher ground overlooking the sea (Kaul 2001, 2005, 2006b, 2010; Kaul et al. 2005; Jensen 2006). They are situated on 'a line' along the coast together with the Madsebakke field. From Madsebakke and the other rock carvings of this line, the northernmost tip of Bornholm, Hammer Odde, is visible, as well as one of the best landing places of Bornholm at Sandvig.

As an example of the relatively small rock carving fields – due to the small outcrops with a suitable surface for making rock carvings – on the Hammersholm plateau, a site close to the top of the plateau on its northern slope should be highlighted. The figures include five ships, two horses, a wheel-cross and some cup-marks (Fig. 1). The shape of two of the ships with prows ending in stylized heads of animals and highly raised keel extensions at the stems follows nicely in the general scheme of Scandinavian Late Bronze Age ships. However, the loop-shaped stems together with a tendency towards a symmetrical ship-shape seen on the two most prominent ships indicate a dating to the very end of the Bronze Age for these ships.

On another side of the Hammersholm plateau, on a terrace of its north-east facing slope, a rock carving with an exceptional cup-and-ring-mark motif was discovered in 2009 (Kaul 2010). On a small outcrop facing north-east, within an area of just 1.1 m x 0.8 m, a central motif of concentric circles is surrounded by stylized ship images, other figures and cup-marks. The central motif consists of three concentric circles around a cup-mark. At



Fig. 1 Rock carving on Hammersholm, Bornholm, including horse figures and ships, found in 2005 by Martin Stoltze. Photo: Kaul & Milstreu.

the 'upper' side, where the outer circle is broken, a straight line goes out. This line is not as deeply pecked as the concentric circles themselves, and it might be a later alteration. The circles consist of deep cup-marks connected by 'bridges' of lower pecking, giving a string of beads-like effect (Fig. 2). The diameter of the figure is 29 cm.

Immediately, this figure could be interpreted as a rendering of an object belonging to the ritual sphere – as a solar image on a stand – a phenomenon spread over larger parts of Bronze Age Europe (Kaul 2004: 352ff.). Among the best parallels stand a rock carving figure from Luine in Valcamonica, northern Italy, similarly consisting of three concentric circles around a central cup mark (Fig. 3) (Sansoni et al. 1999: 84ff.).

However, other interpretations should be considered equally. When surrounded by stylized ship images, we may be dealing with a cosmological representation, the very Sun with its 'helpers' going round and round (Fig. 4). Two of the ships are very simple, with in-turned stems. A possible third ship seems to carry a stem in the shape of a stylized head of an animal. But is it a ship? Could it be a swimming bird instead? There is also a waving line. Could it be a snake? If this is the case, then the rock carving represents a ('normal' Late Bronze Age) mythological model

with the sun, sun-ships and mythological animal helpers (Kaul 1998, 2004). Some of the same elements can be identified on a rock outcrop at Borgen in south-west Norway. Two groups of ships – including ships travelling from left to right (day-ships) and from right to left (night-ships) – flank two concentric circles. The animal element is present in the shape of a horse (Coles 2005:209; Bradley 2009:155f.) Also, here we could say 'round and round we go' with ships and animals marking the eternal movement of the sun (Fig. 5). Unfortunately, the direction of travel is not marked on the rock carving from Hammersholm. Other complex rock carvings are similarly interpreted as renderings related to the journey of the Sun – showing the transition from day to night and from night to day, including day and night ships and sun horses (Kristiansen 2010: 108ff.).

Outside Scandinavia

Concentric circles with a central cup mark (cup-and-ring marks) are relatively rare in Scandinavia, the most prominent circle motif here being the wheel-cross. However, outside Scandinavia concentric circles range among the most common rock carving motifs, particular in Britain and Ireland, with concentrations in the Kilmartin Valley, Argyll, Scotland, and in Northumberland, in northern England (van Hoek 1997; Beckensall 1999, 2004, 2005).



Fig. 2 The concentric circle on a rock carving on Hammersholm, Bornholm, found in 2009 by Martin Stoltze. Photo: Kaul & Milstreu.

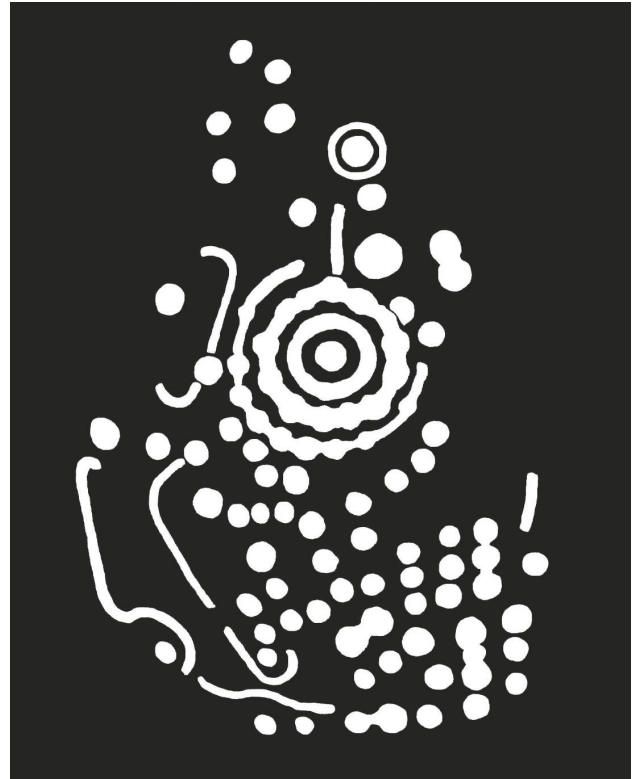


Fig. 4 Graphical rendering of the concentric circle rock carving on Hammersholm, Bornholm, also including stylized ship images. Image: Kaul & Milstreu.



Fig. 3 Concentric circles on a foot, perhaps a rendering of a cult object, a sun image on a pedestal, rock carving from Luine, Valcamonica, Alpine, northern Italy. Photo: F. Kaul.

The cup-and-ring mark from Hammersholm with a line adjoined to the circle could be compared with those British examples, and one might consider the possibility of some sort of connection. On the other hand, the similarities are not quite as close as it may look at first glance: in Britain the line almost always penetrates all of the concentric circles, meeting the central cup mark. Furthermore, the British (Scottish) cup-and-ring marks seem to belong to the Neolithic, not the Bronze Age (Stevenson 2002). In the areas of the Atlantic seaways similar motifs occur with a marked concentration in Galicia, north-western Spain. In Galicia as well, it is the variant with the line going into the centre of the concentric circles that is the dominant one. As in Scotland, the Galician cup-and-ring marks seem to belong to an early part of a long rock carving tradition (Fredell 2010:62).

When moving away from the ‘Atlantic seaboard’, concentric circles are still important features among the rock carving motifs, particularly in the Alpine region. In northern Italy rock carving fields at Sonico in Valcamonica (Sansoni et al. 1999:87) and at Lago Nero in Valtellina (Priuli 2006: 209) are dotted with concentric circles. This is also the case at Carschenna in south-eastern Switzerland, not far from Valtellina (Priuli 1996: 91ff.; Diethelm & Diethelm 2000).

Back to Scandinavia

The concentric circle is relatively rare in Scandinavia, although it occurs in most of the Nordic Bronze Age rock carving regions, for instance in Trøndelag, Rogaland, Telemark and Østfold in Norway. In Sweden a few examples can be found in Västergötland, more in Västmanland and some on specific sites in Östergötland and

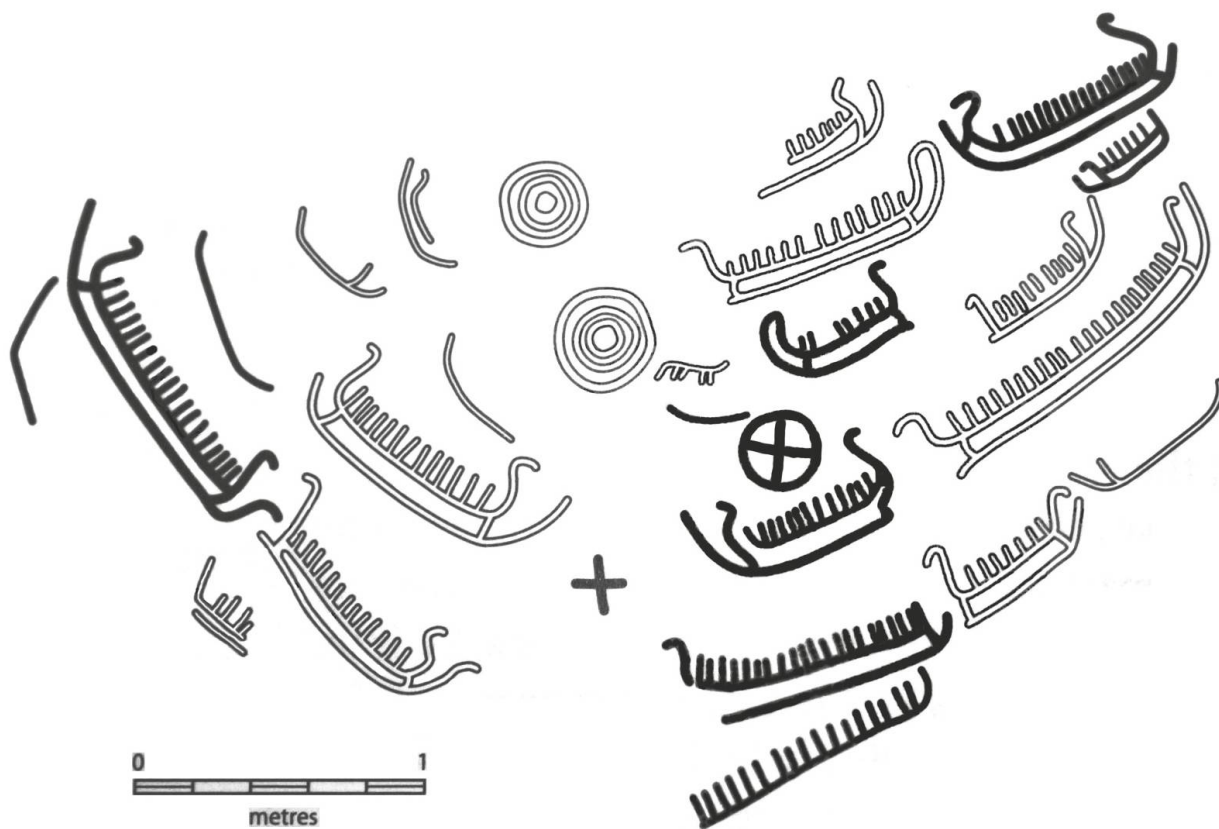


Fig. 5 An interpretation of the designs on the rock carving at Borgen, south-west Norway. Two concentric circles are surrounded by ships, according to R. Bradley both right-sailing day ships and left-sailing night-ships. Right-sailing ships in contour, left-sailing ships in full line. After Bradley 2009.

Uppland, but they are rarely seen in Skåne and Blekinge. There are surprisingly few in Bohuslän where we might have expected a majority of such a design to be present along with the wealth of other images (Coles 2010: 16). In Hordaland, western Norway, a marked concentration should be noted (Mandt Larsen 1972: 72ff.), and a smaller concentration in Kronobergs Län, Småland, south Sweden, is also worth mentioning (Skoglund 2006). In both areas the concentric circles outnumber the wheel cross. One stone, Utrikestenen, Lofta, Småland, south Sweden, is embellished with five concentric circles, five right-sailing ships, a horse and humans, and should be highlighted (Goldhahn 2005: 113).

On a rocky ridge at Knarrbyn in Dalsland, east of Bohuslän, there are around 30 concentric circles on six relatively small outcrops. Crowning the ridge, they are situated within a line of just 300 m.

Apart from a few single circles there are no other motifs, not even regular cup marks. Also the environmental position is unusual being high up in the landscape, and far inland (Coles 2010). Around 13 km to the south we find the well-known rock carvings at Tisselskog, including ships, human figures, snakes and a couple of concentric circles. Those more 'normal' rock carvings are situated close to the water edge of a lake.

It has been suggested that the circles of Knarrbyn should not be seen as solar symbols, but as images giving some sort of contact with the dead. It is often in the same high position that we find the burial cairns, and at Knarrbyn some cairns do share this landscape situation with the rock carvings. Furthermore it

has been suggested that the concentric circles could be a sort of representation of burial cairns, this being supported by a special feature only found here: in 15 of the rings from Knarrbyn the inner 'circle' has a rectangular or angular oblong shape. Perhaps these represent the shapes of the cists at the heart of burial cairns (Coles 2010: 21). However, this interesting interpretation of the group of concentric circles from Knarrbyn does not necessarily contradict an interpretation in the field of cosmology or solar symbolism, since the circular mound or cairn (including stone built multi-ringed circles) in itself could carry solar references (Goldhahn 1999: 204; Kaul 2004: 171; Nordenborg Myhre 2004: 160, 221).

In a wider landscape perspective the location of the Knarrbyn rock carving sites could suggest that they were part of a sacred passage or road, leading southwards to the major cairn cemetery and rock carving sites at Tisselskog (Coles 2010).

Back to Bornholm – from micro-landscape to macro-landscape

The rock carvings of northern Bornholm could be seen in a local as well as a wider geographical context. As mentioned above, our rock carving with the concentric circles is situated on the north-east facing slope of the Hammersholm plateau. Only 45 m west-south-west from this outcrop – and up the slope – there is another rock carving with one ship image, and a further 45 m from this, in the same direction, at the highest point of the Hammersholm plateau, is another outcrop bearing three ship images. On the same 'level' as the rock carving with the concentric circles, also on the



Fig. 6 A view from the concentric circle rock carving on Hammersholm over the landscape and the slopes of Hammersholm. About 1 km away the small knoll of the Madsebakke carvings is marked by a dark square. Photo: F. Kaul.

north-east facing slope, other outcrops with ship images and other motifs have been found. There is a clear intervisibility between these sites.

From this side of the Hammersholm plateau there is an excellent view over the best soils of farmland and the coast. And also, from here, can be seen the rock outcrops with some of the largest rock carving fields such as Madsebakke. The lower lying 'line' of rock carvings is situated about 1 km south-east of the Hammersholm plateau. It is as though the rock carvings 'embrace' the most fertile land best suited for agriculture, the lower line marking the lower limit for this land close to the coastal zone with more craggy rocks lesser suited for agriculture. In the same way the rock carvings of Hammersholm seem to mark the upper limits of the best land. Behind these we find Hammershus Slotslyng, which is best suited for pasture. Other features could have governed the choice for the placing of the rock carvings as well. From many of the sites the best landing place of northern Bornholm at Sandvig – Osand Bugt – can be seen. If devoid of trees, the high position of the Hammersholm rock carvings with a splendid view of the horizon would have yielded excellent opportunities for observations of sunrise and sunset round and round the seasons of the year.

The intervisibility between the 'upper' and the 'lower' rock carvings should be noted. In particular, the low knolls of Madsebakke and the nearby destroyed ship images can be seen from our rock carving with the concentric circles (Kaul et al. 2005: 11ff.) (Fig. 6). Perhaps this intervisibility was intentionally marked on the rock carving itself. The cups marks seem to form lines, and of the slightly fanning lines, the central one points south-east, in the direction of Madsebakke. Furthermore, some

of the Hammersholm sites could have marked a sacred passage or road leading down to the major sites at Madsebakke. This may be supported by the fact that just 75 m east-north-east from the concentric circles a rock carving including a pair of 'footprints' and 20 cup marks has been found. The feet point in the direction of Madsebakke, though the 'sighting-line' of the feet seems to 'hit' a little bit north-west of Madsebakke (Fig. 7). But on the way to Madsebakke, there was a little well – perhaps a path to Madsebakke could have passed this natural feature? Perhaps total accuracy for such sightings is not needed, when dealing with a couple of degrees, and when marking a path. The point is that when you stand in the footprints and with your bare toes can feel the toes in the stone, then your attention seems directed towards the visible knoll of Madsebakke.

Most of the Bornholm rock carvings with ship images are found within a couple of kilometres from the northernmost tip of Bornholm, Hammer Odde, and the related Hammeren promontory. Parts of this marked natural feature could have been seen from most of the sites (when removing the trees now taking the view), and apart from 'fencing' the best arable land the visibility of the cliffs of Hammeren may have been a decisive factor for the placement of these images in the landscape. Perhaps Hammeren was a sort of 'holy mountain'? Also the proximity of the best natural harbours or landing places should be considered.

Rock carvings with ship images are very rare outside this area close to Hammeren. Around 15 km south-east of Hammeren we find an interesting exception. At a high altitude (c. 100 m) behind Gudhjem, there is an outcrop at Lensgård which bears six ships and a number of cup marks (Kaul 2001: 60ff.). But



Fig. 7 A couple of 'footprints' on a small rock outcrop a little bit lower on the upper slope of the Hammersholm plateau than the concentric circle rock carving. The shape of the feet is very similar to what is seen on the Järrestad rock carving in Österlen. Photo: Kaul & Milstreu.

still here, the visibility of Hammeren may have been a decisive factor for choosing this particular place, since Hammer Odde is clearly visible overlooking the Tegn Bay. There may also have been other factors involved, since it has been observed that on midsummer sunset the sun slowly rolls down over the sloping Hammer Odde, ending in the sea exactly at its tip (Fig. 8). It was even more astonishing to realize that on very clear days the Stenshuvud promontory on the Swedish coast, c. 70 km away, is just visible from the Lensgård site (Kaul et al. 2005: 97). It can be seen as a little shadowy 'blip' in the water exactly at the very tip of Hammer Odde. This means that at summer solstice, in clear weather, when seen from Lensgård, the sun rolls down Hammer Odde setting in the water just where the Stenshuvud silhouette creates a distant background. Or the sun is simply going down into Stenshuvud? Only the relatively high altitude makes it possible to see far away Stenshuvud.

It seems reasonable to assume that there has been some large-scale landscape connections between the Hammeren promontory on Bornholm and the Stenshuvud promontory on the Scanian Österlen coast, both probably being regarded as 'holy mountains'. They should also be seen as the most prominent landmarks when sailing from Scania to Bornholm and vice versa. There are excellent landing places at both landmarks (Fig. 9).

When reversing the view, standing on Stenshuvud or nearby, the promontory of Hammeren is visible. And like on Bornholm, some Bronze Age sites in Österlen seem to be visually connected with the marked cliffs of the promontory. From the famous Bredarör cairn at Kivik, Stenshuvud would have been clearly visible, if the landscape in between was devoid of trees. In the same way, Stenshuvud would have been visible from the nearby large ship



Fig. 8 Midsummer sunset seen from the Lensgård rock carving at Gudhjem, Bornholm. The sun is just about to roll down over Hammer Odde, entering the sea at the very tip. This time, cloud cover masked the last minutes of the voyage of the sun. Photo: F. Kaul.



Fig. 9 Some of the sites mentioned in the text. Drawing: T. Bredsdorff.

setting at Ängakåsen and the cult houses at Koarum. Also here, there might be some astronomical observations worth considering. Seen from a small stone circle named *Höga Stenar* or Heimdall's Stones about 5 km north-west of Bredarör the sunrise at winter solstice is precisely at the distinct notch marking the eastern rise of the promontory of Stenshuvud. The sightline passes right across the stone ship at Ängakåsen. It is worth noting that this sightline is directly opposed to the one from Lensgård, Bornholm, to Stenshuvud at summer solstice (Mörner et al. 2009).

Further south, along the Österlen coast, the Hammeren promontory is visible as the landmark of Bornholm, for instance from the rock carving sites at Simris and Järrestad (though from here Stenshuvud is not visible). While the Simris rock carvings are close to the coast, the Järrestad rock carvings are situated high in the landscape, a bit inland a few km from the coast. However, the inland position may also reflect a connection to the Baltic Sea, the higher position making it possible to get a better view, overlooking the sea, and particularly a better view of the Hammeren promontory. Seen from Järrestad it should be much easier to follow a ship all the way from the Österlen coast to Hammeren, and just behind Hammeren we find the finest landing places.

No doubt, there were close and regular contacts over the Baltic Sea between Scania and Bornholm. We could mention the Bornholm fibulae, a special type uniting Bornholm and Scania as an example, or the Early Bronze Age remains of a bronze vessel from Bredarör, which can be paralleled with a bronze vessel from Gyldensgård on Bornholm (Randsborg 1993: 54ff.).

Water should be regarded as connecting rather than separating, especially during the Bronze Age, where the ship became the paramount symbol of transport and movement both in the 'earthly' human world and in the other world, being the mediator in all spheres. The promontories of Hammeren and Stenshuvud mark a pass in the sea in the practical sphere at the same time as being

cosmological markers: the geography of earth and sea became part of the cosmological geography related to the voyage of the sun round and round.

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AN EPOS CARVED IN STONE: THREE HEROES, ONE GIANT TWIN, AND A COSMIC TASK

Lene Melheim

Abstract: It is here argued that the Fossum rock art panel in Bohuslän, Sweden, represents a Late Bronze Age narrative about the creation and recreation of the universe, and of three heroes performing deeds to this end, that belongs to a corpus of Indo-European myths. Narrative themes are identified on the basis of Vedic and Norse poetry: a primordial hermaphrodite, a giant who furnishes the universe, dogs of death, saviour twins and the rescue of the sun. Nordic Bronze Age iconographic conventions, notably the right–left, up–down logic, serve as tools for the interpretation.

Keywords: Late Bronze Age, rock art, Indo-European poetry, sun myth, heroic deeds, primordial beings, horse sacrifice, twin representations

Preface

Kristian Kristiansen has boldly, at times when migration and Indo-Europeans were mostly banned from archaeology, discussed the Indoeuropeanization of Scandinavia and manifestations of the much debated tripartite structure (e.g. Kristiansen 1991, 1998, 1999, 2005, 2009, 2010a, b, 2011, 2012; Kristiansen & Larsson 2005:258-319). It is widely held in studies of rock art that figurative scenes most commonly represent ritual performances, and that myths or legends are seldom depicted (Almgren 1927; Kaul 1998, 2004). As opposed to strict behaviour-oriented perspectives, I here maintain that the Late Bronze Age Fossum panel (Raä 255, Tanum parish) in the World Heritage area of Tanum in Bohuslän, western Sweden, is best understood against the backdrop of Indo-European myth (Melheim 2004, 2006:121-126). Kristiansen (2010a) recently proposed that the axe-fighting and lure-blowing men on the Fossum panel represent the Indo-European Divine Twins (cf. also Karlenby 2011). The Divine Twins parallel the Indic Aśvinau or Ashvins: the subject of more than fifty hymns in the tenth-century BC text *Rig Veda*. In this article I explore further some of the narrative elements of the Fossum rock art. The panel is dated to Late Bronze Age period IV or 1100-900 BC (Almgren 1987).

Indo-European myth and the interpretation of rock art

The enduring archaeological scepticism towards anything Indo-European seems to be partly a reaction against racist abuse of the theories of origin and partly a professional controversy over the adequacy of migrations or language genealogies as explanatory factors (e.g. Renfrew 1987; Robb 1993, cf. Amundsen 2003; Gray & Atkinson 2003; Schjødtt 1998). The recent revival of the concept has been bolstered by refined models for migration (e.g. Anthony 1990, 1995, 2007; Mallory 1989; Mallory and Adams 1997, Mallory and Mair 2000; Vander Linden 2003). It is argued by those advocating the theory that Indo-European language and culture spread to the Nordic region in the third millennium BC (e.g. Håland & Håland 1995, 2000:212-213; Kristiansen 1991, 2009, 2012; Oma 2008; Prescott & Walderhaug 1995; Østmo 1996, 1997). In the perspective applied here, Indoeuropeanization is looked upon as a process to which both cultural convergence and divergence contributed and which by the time of the Fossum panel had been affected by continued interaction with other

groups, Indo-European as well as non-Indo-European (Kristiansen 2011). It is up to the reader to judge if the comparison works, and if this is so, I believe the relevance of Indo-European myth to Bronze Age iconography has been strengthened. In other words, the proof of the pudding will be in the eating.

A dichotomized division between material culture and written records, human behaviour and thoughts, ritual and myth, is indeed counterproductive. Rather than reflecting any prehistoric reality these are modern interdisciplinary divides that may be overcome when using the two types of evidence systematically without giving precedence to one or the other (e.g. Andrén 1991, 2006; Fredell & García Quintela 2010:76; Wiker 2001, 2004). The information provided by the very different Indo-European texts is far from consistent, and the statement: ‘This is mythology, not biology’ (West 2007:192) pretty much sums up the contradictions of the Indo-European pantheon. Needless to say, as a cultural phenomenon and the result of changing, time–space contingent human practices, Bronze Age rock art also violates and transcends any attempt at religious or mythological catch-all interpretation. Yet, it has recently been demonstrated that some rock art panels provide coherent scenes or iconographic details that Indo-European themes and narratives serve to explicate (e.g. Fredell 2003:246-254, 2010; Fredell & García Quintela 2009, 2010). The present interpretation rests on the idea that the narrative structure of rock art is episodic, i.e. that an entire story can be told through one or a few central events (Kristiansen 2010a; cf. Hauptman Wahlgren 2002:192-200). An important aspect of the approach, building on Åsa Fredell and Marco García Quintela (2010:76-77), is to distinguish between:

- The elucidation of rock art scenes and symbols in their Nordic Bronze Age context;
- The elucidation of texts and their significance.

The latter will be based partly on synoptic works concerning Indo-European myth (Dumézil 1973 [1959], Lincoln 1986, 1991; Mallory & Adams 1997; West 2007) and a few chosen texts from the *Rig Veda* (cited from O’Flaherty 1981). A working hypothesis for the ultimate comparison is that the panel exhibits a mythological tripartite structure which is reminiscent of Georges Dumézil’s three main functions: 1. Two sovereign gods concerned with magic and jurisdiction. 2. A warrior god. 3. Protective twin

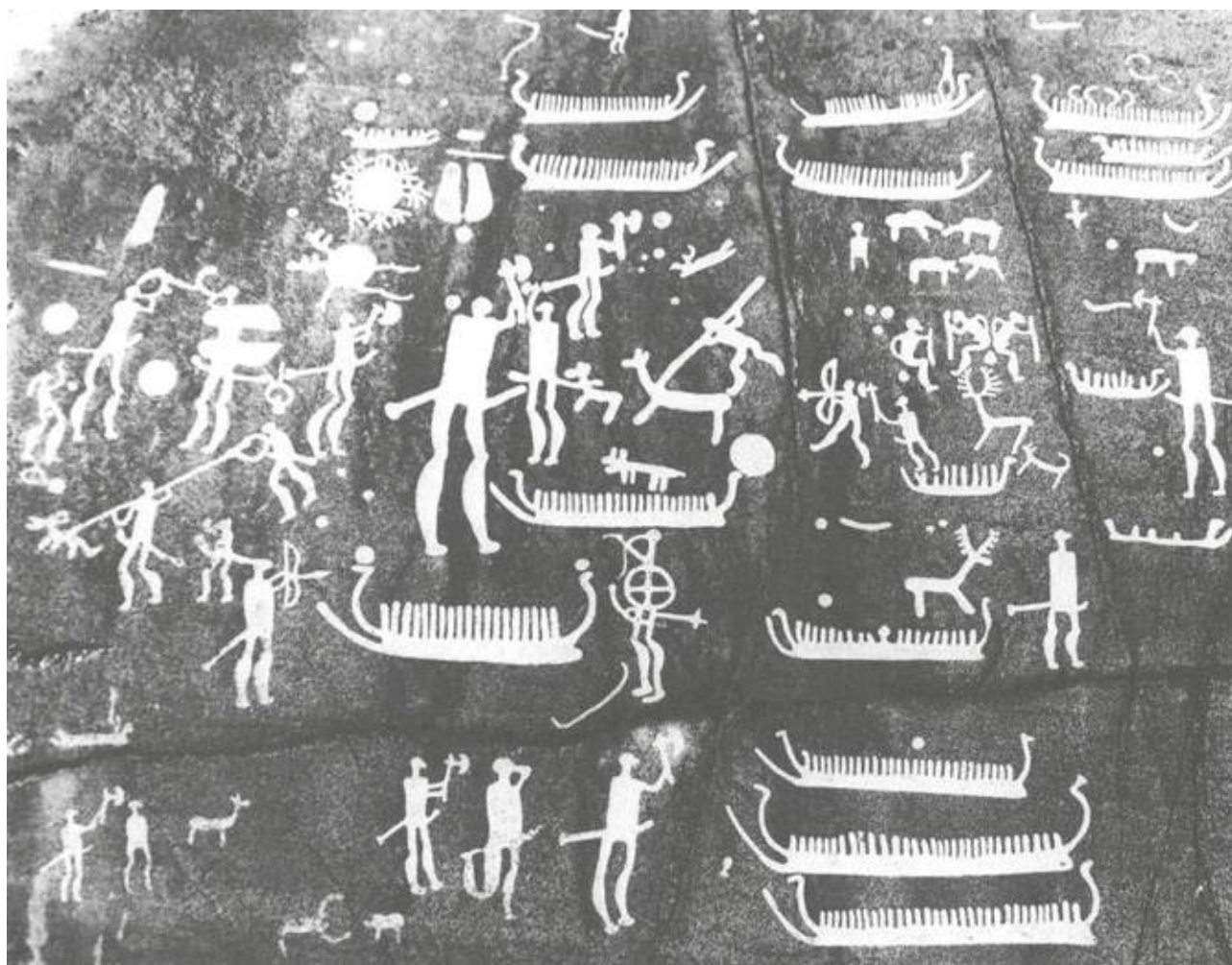


Fig. 1 Photo of main section of Raä 255, chalked. From Kaul 1998, fig. 171.

gods responsible for fertility and prosperity. The tripartite structure is also found in e.g. threefold conceptions of space (Littleton in Dumézil 1973 [1959]:xii). Another aspect is a twofold partition represented by dual natures, twins and oppositions within the pantheon (Dumézil 1973 [1959]:12-16, 23-24).

The narrative of the Fossum panel

The Fossum panel is a rare example of stylistic homogeneity and a high degree of internal coherence, arguably carved by one artist (Milstreu and Prøhl 1999; Karlenby 2011:270). It is atypical in several ways, including the fact that it is situated at 45 m.a.s.l. and thus away from the sea, and portrays iconic or ritual features not otherwise seen on the more socio-realistic shore-bound panels (Ling 2008:181-182). It is also a rare example, in Flemming Kaul's interpretation, of the Bronze Age solar myth carved in stone (Kaul 1998:266-267; cf. Bradley 2006a; Kristiansen 2010a).

In the following, the panel is described from the perspective of an onlooker standing below it (Figs. 1-2). A right-left logic is applied, where right in general has good connotations whilst left is bad (Kaul 1998; Melheim 2008). The ships' sailing direction – right and left indicating day and night ships respectively – is underscored by their position on the upper or the lower level of the panel (cf. Karlenby 2011:9-12). Similar spatial distinctions occur in Indo-European symbolism: right is used to indicate south and

left north (Mallory and Adams 1997:119). In the interpretation of singular scenes, the perspective will be that of the onlooker (or the carver) and that of the carved men simultaneously. Although these are obviously diametrically opposite when the carved men are facing the onlooker and thus laterally inversed, both are anchored in the logic of Bronze Age iconography, which seems – as ours – to have rested on a combination of body orientation and cardinal points (Melheim 2008). Natural fissures divide the panel into different sections, which have been used by the artist to separate the underworld from the earth, and the world of men from that of the gods (Karlenby 2011:9-12, fig. 39).

Most of the exposed rock face has been utilized for carvings. I have left some out, in order to be able to focus the narrative. The images cluster in the upper left corner of the panel, which is here named *the main scene*. I shall, however, start with an isolated scene situated a few metres to the right, in the lower part of the panel, which I have nicknamed the *opening scene* (Fig. 3, not shown on Figs. 1-2), since it provides clues to the interpretation of the main scene. Here, three similar-looking men are depicted: they are phallic, with accentuated calves and protruding noses, each with a sword on their left-hand side and a cultic axe in the raised, right arm. Comparative evidence from Sweden, e.g. a figurine from Glasbacka in Halland with a beak above a human face (Montelius 1917 fig. 1476), or the Grävensvenge twins from Zealand (Djupedal & Broholm 1953 fig. 7), may suggest that the



Fig. 2 Ink tracing of larger excerpt from Raä 255 with the journey to the underworld to the i.e. right. From Milstreu & Pröhl 1999.

men are wearing bird-masks or have been transformed into birds. Another, less explored, possibility is that they represent bears or wolves.¹ The company of men is accompanied by three dogs. Apart from one man who is oriented in the opposite direction, all are facing right towards the main scene, to the left in the onlooker's perspective. The third man has turned his back on the others. He is also rendered in a smaller scale, possibly indicating that he is farther away in time or space. Above them is a net or frame symbol, a pair of footprints and again, two men with axes, facing right and towards a large circle. The circle may represent the sun (Karlenby 2011:9, 271), or, judging from the irregular shape, perhaps an abyss or void. Footprints are considered to signify divine presence or physical absence/death (cf. Hauptman Wahlgren 2002:71), and the logic of the Fossum panel implies that this is a representation of the third man, who is no longer present in the panel's real time. Moving to the left between the opening scene and the main scene in the lower part of the main panel (Fig. 2: Detalj 3), is a suite of animals – a bull, two horses and another horned animal (a cow?) – and a big ship with a large crew, on board which are two men engaged in single combat (cf. Ling 2008:194-196, fig. 10.11; Vandkilde 2011:375, fig. 5A). That the battle is ritual or mythical is seen not least in the axes, which would at the time of the Fossum panel's present, have been historic as actual armament.

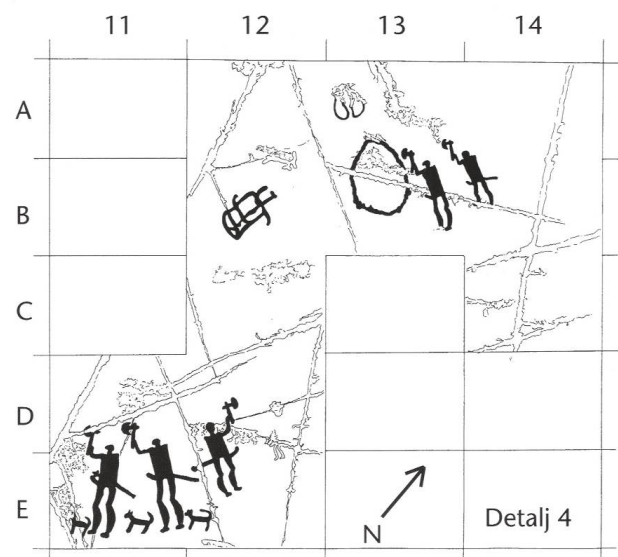


Fig. 3 The opening scene showing the three men and their dogs and two men, a pair of footprints and an i.e. abyss. From Milstreu & Pröhl 1999.

¹ The protruding noses are reminiscent of images on Late Iron Age helmets, interpreted as warriors in a state of rage: the 'bear shirts' or 'wolf skins' of the Norse sources (Andrén 2006:35).



Fig. 4 The deeds of the three men in seven different episodes from the main scene (Fig. 1 modified).

In the main scene, the three men from the opening scene are recognized in a number of different situations, mainly concentrated to the middle part of the panel and thus separating the two rows of ships (Fig. 4). The very busy upper left part of the panel is where, in Kaul's interpretation, the night ships sailing to the left are replaced by day ships sailing to the right, indicating the critical moment when the sun is lifted to the skies at noon (Kaul 1998: 266-267). Several obscure motifs occur here (Fig. 5A). From the top there is first a large cup-mark or circle from which nine (?) differently shaped 'appendices' emerge. The image is reminiscent of similar symbols on the Wismar horn from Mecklenburg in Germany and several rock art panels, and has been interpreted as a representation of the rising sun or the creation (Fredell 2003:236; Kaul 1998:266). The naturalistic rendering on the Aspeberget panel in Bohuslän (Raä 12, Tanum parish) allows an identification of two women, two birds and six so-called three-flangs or adorants. Next to this symbol is a pair of footprints and a cup-mark, and beneath it another large circle with five appendices: a sword, a pair of legs and two animal-like figures. The sword may simply, according to rock art conventions, signal that this giant creature is a man. Yet, as the floating state and weak legs suggest that he is dead or bereft of his powers, it is also possible that he has been stabbed with the sword. Further down, another pair of footprints overlaps a man blowing the lure with another identical-looking man. The connected lures underscore the close relation between the men. Although overlapping, the footprints

are clearly contemporary with, and probably deliberately mark out, the lure-blower on the right-hand side as no longer present in the panel's real time. Below the man's sword is a circle with a dot and a tail, very probably a *hieros gamos* seen from above depicting the couple's connected arms, a man's bare head and a woman's ponytail (cf. Fredell 2003:151, fig. 426). Behind the lure-blower to the left, also in this case right below his sword, is a pony-tailed figure, a woman, with a cup-mark between her legs: typically considered a symbol of giving birth, femininity or a general fertility symbol (cf. Hauptman Wahlgren 2002:63). Immediately below the female is another cup-mark and a symbol shaped like a fan or butterfly. The woman is depicted in a smaller scale than the lure-blowing men. Two large cup-marks relate to the strictly composed lure-blower/fertility scene and perhaps also another single footprint.

The men are involved in six other episodes, here presented clockwise. The centrally placed duel (Fig. 5B) with an oversized man fighting another man, each right-handedly raising his cultic axe, is again reminiscent of a stylized, ritual combat. A third and similarly equipped man in the background belongs to this episode, but has turned away. A hunting episode (Fig. 5C) in the middle of the panel is also most probably ritual in character and reminiscent of a sacrifice, as the unusual game – a horse and its foal – are hunted with three different weapons, including a cultic axe. Further to the right (Fig. 5D), all three men are engaged in

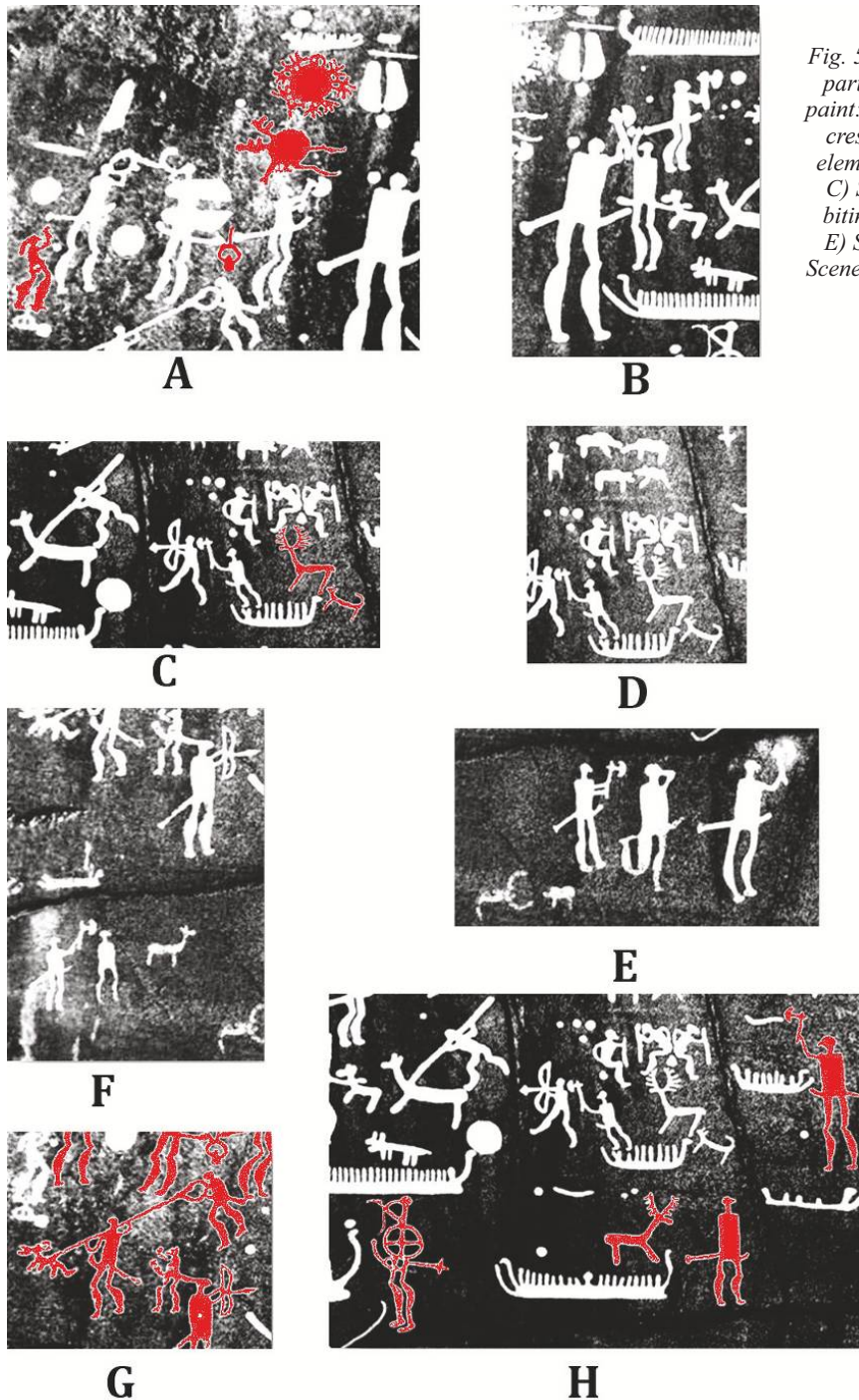


Fig. 5 Selected episodes from the main scene with particular elements discussed in the text in red paint: A) Scene 1: lure-blowers. The cosmological crescendo: the world is created from primeval elements and a giant B) Scene 2: single combat. C) Scene 3: horse hunt (sacrifice) and the dog biting a deer. D): Scene 4: dancing with sticks. E) Scene 5: in the lower realm. F) Scene 6: G) Scene 7: stabbing or trapping of wolf. H) Scene of transformation.

some form of dance, each carrying a stick, yet two are united and one alone. The deer and the dog biting its leg below them may be seen in relation to this event, alternatively the hunting episode, although this is not entirely clear from the composition. Above them is a group of four animals, very probably bears (cf. Helskog 1999), and a fifth similar-looking animal further to the right. In the lower part of the panel, two of the three men are, judging from the rendering of their legs, hurt or weakened (Fig. 5E): in particular the man in the middle whose left knee is bent in an unnatural position, while the other has unusually slim calves and a droll left leg. Behind them are two animals: a small bear-like figure and a larger one reminiscent of a scorpion, yet in its Nordic context more probably a bull seen from above. The next episode (Fig. 5F) is diagonally depicted in the lower right corner: two men in a smaller scale, one with a cultic axe, the other unarmed, and one or possibly two horses, stand passively behind a larger man with a

bow. In the last episode (Fig. 5G), which brings us back to where we started, one man is in the distance while two men cooperate in stabbing or trapping – with a very long spear, stick or rope with a loop – a small animal with long ears and a curved tail, probably a *canis* and possibly a *lupus*, i.e. a wolf.

Aside from the seven different episodes, three single men occur in the middle part of the panel, for convenience named *the transformation* although the men are no longer united spatially or in action (Fig. 5H).² One is accompanied by a ‘sun deer’ (Fredell 2010). When it comes to appearances, the upper figure is business

² That it is yet another event is justified by the fact that they are the only anthropomorphic images left in the main scene. The human indicated in relation to the bears on Fig. 1 is merely sketched on Fig. 2 and may represent damage to the panel or is fragmented beyond identification. Two, or perhaps three, other men in the upper part of the panel are connected to the six celestial ships.

as usual with sword, phallus and raised axe, another is, apart from the sword, literally unarmed – no arm, no axe – perhaps having lost his right arm, while the third is extremely well-equipped with enlarged phallus, pronounced testicles (?), a solar wheel shield and an extremely long sword with a distinguished scabbard. Emerging from his mouth or nose is a long line. Compared to the homogeneous rendition of the opening scene, the men now seem to have undergone a transformation. Have our heroes turned into something else as their mission is completed?

Turning now to Indo-European poetry and more particularly giants, dogs and saviours, the following elements of the Fossum narrative will be indirectly approached:

- *The opening scene* with two episodes, one in which the three men are basically equal and accompanied by three dogs and another which involves only two of them, a pair of footprints and an abyss in the lower right part of the panel;
- *The cosmological crescendo* represented by the two large circles with appendices, the lure scene which is surrounded by sexual/reproductive symbolism, the hunting or trapping of a wolf, the axe duel and a horse sacrifice, in the upper left part of the panel;
- *The underworld scenes which are separated from the world of men and gods and staged as a journey from right to left;*
- *The transformation* where the men appear as three distinguished characters: a by every means potent male embodying the sun, a male with the attributes from the opening scene and an unarmed man;
- *The internal opposition between the three men:* Most scenes involve two active men, while the third is either excluded, passive, has turned away and/or is spatially or temporally distant – further ahead or farther back in time or space.

Excerpts from Indo-European myth

Giants

Grounded in the idea of a parallelism between micro and macro cosmos, the Indo-European mythical world is upheld and constituted through sacrifices (Lincoln 1986, 1991; Näsström 2001:145-149; Odner 2000:104; Steinsland 1997:51). Norse poems like *Vaftrúdnismál*, *Grímnismál* and *Gylfaginning* tell the story of a twin – Ymir – who creates and fashions the world of men and gods (West 2007:356). The name Ymir ('twin') probably refers to his hermaphroditic capacity of procreation. From the sweat of his armpits came man and woman. His legs made love to each other and begot a six-headed son who was the ancestor of giants. Ymir was killed by his grandsons Odin, Vile and Ve, who made the earth out of his flesh, mountains from his bones, trees from his hair, the sky from his skull, and the sea and lakes from his blood. A similar creature, Tuisto ('twin' or 'hermaphrodite'), mentioned by Tacitus in the first century AD as the ancestor of the Germans, implies that the concept of a giant also has more ancient roots in northern Europe. In Indic poetry, the giant twin is represented by Yama, but when the world is created it is from Purusa ('man'). The Vedic hymn of Purusa is held to belong to an Indo-European corpus of myths of dismemberment³ and expresses the typical paradox that Purusa is both the subject and the object of the sacrifice: 'With the sacrifice the gods sacrificed to the

sacrifice. These were the first ritual laws.' (Rig Veda 10.90:16, cf. Lincoln 1986:4; O'Flaherty 1981:29-32). The female creative principle, Viraj, was also created from him though at the same time creating him: 'From him Viraj was born and from Viraj came the Man. When he was born he ranged beyond the earth behind and before.' (Rig Veda 10.90:5). In the same way as Ymir, Purusa and the universe are homologous (Rig Veda 10.90:12-14). Other hymns of creation accentuate the primordial chaos (e.g. Rig Veda 1.185): described as a dark, formless, enormous and terrifying abyss associated with the night and the underworld (O'Flaherty 1981:205). This is matched by the Norse Ginnungagáp, which provided raw material for Ymir and the creation of the world (Steinsland 1997:38; Wiker 2004). The elucidation of Vedic and Norse poetry suggests that Ymir represents a merging of at least two older concepts, the primal hermaphrodite who created man and woman, and the primal giant who was carved to furnish the world (West 2007:358-359).

Dogs

In general not just the Indic, but also Celtic, Germanic, Armenian and Iranian sources refer to two dogs, one being the dog of life, the other of death or more specifically the one who carries off those about to die, whereas the first can restore a person to life (Lincoln 1991:96-106). In the Rig Veda, Yamna, the king of the underworld, and his two dogs are dangerous, but also potentially benevolent, as they may lead you to heaven (Rig Veda 43-44). Etymologically, the spotted Sarama, Indra's bitch and the ancestor of dogs (Rig Veda 155-158) equates the Greek hellhound Kerberos (Lincoln 1991:96) and the hounds or wolves of Odin are also held to represent the Indo-European helldog. The Norse poems *Baldurs draumar* and *Fjolsvinnsmál* describe descents to the underworld where Odin encounters a whelp, while the more obscure *Fjolsvid* meets the twin dogs Gifr and Geri. In other poems the loosening of the dog Garmr is a sign that the cosmic battle, Ragnarok, has started. In the Norse context, a more well-known story is that of the wolf Fenris, who is unleashed as Ragnarok begins. Dogs in Indo-European poetry are generally characterized by their hoarse growl and their greed and thirst for blood, and may therefore be warded off by sacrifice (Lincoln 1986:130-131, 1991:246). Dogs are liminal creatures linked to the domain of death and are sometimes referred to as a particularly evil or evil-bringing wolf. Another Indo-European association is that of dogs or wolfs feasting on the corpses of a battle (West 2007:491-492). Wolves are sometimes referred to merely as evil that must be averted.

Saviours

The seafaring and horse-riding twins of Dumézil's third function were identified in Scandinavian rock art in the 1990s (Braarvig 1997b; Østmo 1997), and have subsequently been linked to numerous twin representations in rock art and beyond, summed up by the concept of the Divine Twins (e.g. Kristiansen 1999, 2011, 2012; Kristiansen and Larsson 2005:258-319). In comparative Indo-European studies the Ashvins are the equivalents of the Lithuanian Ašvieniai, the Greek Dioscouri and the Norse triangle Frey, Njord and Freya (West 2007:186-193). They are associated with the shining sun and dawn in particular. The name means 'having (to do) with horses' (West 2007:187). In the Rig Veda they often act as saviours, like for instance when rescuing Bhujyu: 'With birds that flew on for three nights and three days you Nasatyas brought Bhujyu to the far shore of the ocean, to the edge of the wetness, in three chariots with six horses and a hundred feet' (Rig Veda 1.116:4). Here, Nasatyas ('saviours') refer to the Ashvins and Bhujyu is a man rescued from drowning. Bhujyu,

³ The Indo-European mythology on creation from a primeval chaos/monster is clearly also reminiscent of narratives that existed among non-Indo-European Bronze Age groups of the Middle East. For instance, the Babylonian Enuma Elish, written down c. 900 BC, tells the story of Marduk, who after cosmic fights killed Tiamat and then created the sun and the moon and furnished the cosmos (Forshell 2009).

who had been thrown into the sea by his father, is mentioned in a series of hymns, and is in fact a representation of the sun. The horses are ships and the hundred feet the hundred oars of a ship, while at the same time accounting for the 360 days of the solar year. The three days and nights refer to the winter solstice, when the sun's light is considered to be renewed (Frawley 1995:52-53, 189; West 2007:189).

Raä 255 revisited

It seems possible, on the basis of the above, that the dead giant on the Fossum panel represents a Nordic Late Bronze Age version of the Twin/Ymir/Man/Purusa.⁴ The circle above him, which, in keeping with the logic of directions, rises, may represent the world, as it was made from Man's parts. It may at the same time represent the rising sun, as the sun was also created from Man. The concept of a primal hermaphrodite also represents a clue to the circle made up of a man and a woman (Fig. 5A), here interpreted as a variant of the *hieros gamos* motif. It may very well, not in opposition to the intercourse theory (cf. Fari 2007) but rather as an additional aspect, represent a hermaphrodite twin creature reminiscent of the variant of the Indo-European creation myth referred to by Aristophanes in Plato's *Symposion*, where man and woman were from the beginning joined as one, circular creature (West 2007:358; cf. Braarvig 1997a:45). Recalling that in the Rig Veda the female principle created Man and was at the same time created by him, the fertile female on the opposite side of the lure-blowers from the joined couple is evocative – is she the female principle at the same time created from the Twin/Ymir/Man/Purusa and creating him? The woman may represent the vital and chaotic feminine element upon which creation depends (Steinsland 1991:322). It seems, thus, that the Fossum panel portrays the basic elements of Indo-European cosmogony, in which the universe is created and recreated simultaneously.

On the basis of the above and the fissures dividing the panel into spheres, it becomes clear that the dogs of the opening scene actually signify that the men are launching on a journey through the underworld, where the dogs – who represent both death and potential rescue – belong. Further, the dog biting the leg of the deer (cf. Fig. 5C), as is indicated on a rubbing of the panel (Milstreu & Pröhl 1999:77), may represent the Indo-European concept of blood-thirsty dogs. In particular, Norse poetry provides a clue to the interpretation of the wolf in the last episode in the main scene (cf. Fig. 5G). A suggestive analogy for the strange artifice employed in the trapping of the wolf is that of the magical cord made among other things from a woman's beard and a mountain's roots that the gods created in order to bind down Fenris and thus prevent the final battle from starting. Since the blowing of horns is another sign of the eschatological battle, it seems that the wolf which is trapped or perhaps about to unleash itself in the scene immediately below the lure-blowers may have played a role similar to that of Fenris, in a Bronze Age narrative of a cosmic battle. The same goes for another wolf-like creature, perhaps best seen directly in relation to the horse sacrifice (cf. Fig. 5B). Returning again to the panel's composition, the fissure dividing the world of men from that of the gods places the horses which are sacrificed in junction with the axe duel and alarmingly near the wolf, which – in Indo-European myth – is warded off by sacrifice. Very possibly the poor horses are also the Ashvins in disguise.

The zoomorphic faces of our heroes suggest that they are either

in a state of transformation or simply warriors. The attribution of the warrior's wildness to various animal species is a typical Indo-European phenomenon and, aside from bears and wolves, snakes and eagles are also animals whose qualities a warrior would seek (Lincoln 1991:131-137). Are the Ashvins really the particular focus of the Fossum field, as argued by Kristiansen? The archaeological argument, that the Divine Twins in their Nordic Bronze Age wrapping are associated with horses and ships and carry cultic axes, clearly suggests that this is so (cf. Fari 2007:310-316; Forshell 2009; Kristiansen 1999, 2010a, Kristiansen & Larsson 2005:258-319). The sunwards sailing ships surrounding the men's deeds are indeed suggestive of their identity. Ships are described in the Rig Veda as horses, birds or bird-horses, a feature which overlaps remarkably with Nordic Late Bronze Age ship imagery (cf. Kaul 1998). Upon rescuing Bhujyu, the Ashvins are said to have travelled in three chariots with six horses – ships – and a hundred feet – oars. It seems clear from both Greek, Old English and Norse texts that the ship and the chariot were *kennings*, or figurative synonyms, for horses (West 2007:82-83), thus also interchangeable with the Ashvins themselves. Apart from the 12 large ships moving structured, arguably in pairs, across the panel, there are also a number of more dispersed, smaller ships. Given that the smaller ships are helpers, or, the Divine Twins in ship disguise (Kristiansen 2010a), we are left with six day ships and six night ships. The organization of the six sun ships on the Fossum panel into three pairs parallels the six horses and three chariots attributed to the Ashvins in the hymn where they rescue Bhujyu. This is not the least suggestive when taking into account that the sun horse in Late Bronze Age Nordic imagery seems to have been conceived of as two separate horses (Lund & Melheim 2011).⁵

Given that the twins are the Nordic equivalents of the Ashvins, who is the third man? The third man is constantly ambiguous, never interacting directly with the others and only halfway present – dead, about to leave, bad or evil? This is supported by the right-left logic: he is constantly turned left from the perspective of his body. Or is he in fact not partaking in the same way as the others on the journey through the lower realms, as indicated by his absence from the ship combat scene? Or not partaking in the Fossum panel's present as perhaps indicated by his smaller size? A significant detail pointing in this direction is that the bowman in front of the other two in the scene (Fig. 5G) in the lower left part of the panel, who has already ascended from the lower realm, is connected with the smaller man in the trapping of the wolf episode (Fig. 5F). The line emerging from the beak, mouth or nose of the figure embodying the sun in the transformation scene is also suggestive. From the reproduction on Fig. 2 it seems that it may represent a snake. Fredell & García Quintela (2010) have identified the basically Indo-European motif of a snake protruding from body parts, chiefly limbs, in Nordic rock art. In Greek art it is, in an erected position, representative of a warrior's *hybris* but in its Nordic wrapping considered a combined symbol of male virility and aggressiveness. Another appropriate analogy is late Celtic and Nordic Iron Age imagery, c. 500 BC-AD 500, where a line or arrow emerging from the mouth of a male with his right thumb pointed towards the mouth is interpreted as symbolizing the breath/soul of a seer or magician in a state of transformation (cf. Davidson 1989; Wiker 2001). In Indo-European terms, seer

⁴ The two unidentified figures are possibly cows, perhaps reminiscent of the feeding of Ymir by Audhumla in Norse mythology, or a sacrifice.

⁵ When it comes to the hundred oars, a count of the crew strokes suggests that the six sun ships have a total of 137 oars/oarsmen, or, c. 120, when counting strokes only and leaving out lure-blowers etc. and the two coxes in the front and back. Using the same logic, the oars of the night ships total 150, or 137. However, one hundred seems to be another of the Indo-European ideal numbers, used to refer to e.g. a perfect life span or just 'many' (West 2007:299-300, 377, 453).

qualities belong to gods of the first function, for example the reconstructed Indo-European sky-god *Dyeus (West 2007:171). Adding that the Ashvins are supposed to be the sons of the sky god – the Vedic Dyaus – or of the sun in one of its many disguises – Vivasvan – is the third man perhaps the forefather of the twins?

This idea is underscored by the underworld scene, where the unarmed man in the middle is clearly in trouble, judging from his broken leg. The Greek and Etruscan convention for depicting hurt or beaten warriors/leaders is knee-fall, or broken legs, ultimately some form of castration leading to the sterility of the territory (Fredell & García Quintela 2010:87). This theme has Indo-European roots and is linked to the idea that the well-being of the kingdom is dependent upon the potency of the king (cf. Odner 2000). The junction between his right arm and beak – a seer gesture – suggests that the hurt man is the same as has been transformed into a sun and entered the sphere of gods and cosmological drama. The men's weakened state may relate to the dangerous realm of the night, which they, like the ships, badly need to escape from. In particular, the third man's weakened state would represent a tremendous threat to the kingdom or territory, as would the unsuccessful rescue of the sun. Is this a Nordic Late Bronze Age version of the rescue of Bhujyu, where Bhujyu at the same time represents the sun? Following the spatial logic of the panel, he is situated in the sphere of gods, as opposed to the other two, who are left in the world of men. This fits with the idea that the Ashvins are half-god, half-human and therefore communicators between gods and men (Kristiansen 2011:248). Also, it would explain why only two of the men take part in the journey to the underworld (cf. Fig 2: Detail 3). The third man has perhaps, as indicated by the footprints, been consumed by the abyss, or drowned, in the opening scene. Yet, he may be indirectly present among the animals in front of the large ship. The two horned animals, may – again following the *Rig Veda* – as a bull and a cow represent the sky and the earth, the sun's parents (O'Flaherty 1981:203). The two horses are perhaps the Ashvins?

The Indo-European cosmic battle is typically situated partly in the past, partly in the future (Mallory & Adams 1997:180). The scale of the human figures, the different perspectives and the spatial organization of the panel may suggest that there are different temporal levels in the narrative (Melheim 2006:124-125; cf. Bradley 2006b; Fredell 2003:151; Hauptman Wahlgren 2002). I have already pointed out that the female attending the lure-blowers is smaller than the men and thus possibly belongs to another time or dimension – the past, or, the future? The events are however clearly related, as indicated by figures from different scenes being interconnected (cf. Fig. 5G). Using the ships' sailing direction as guidance, it seems that the trapping of the wolf precedes the blowing of lures, which again precedes the combat and so forth. If we combine the spatial structure provided by the sailing directions with the here proposed scaling of persons/events, it seems that whereas the actions taking place in the upper, left corner are the most crucial, simultaneously the most critical, potentially devastating and the most fertile and productive, the combat scene is, judging from the size of one of the men in particular, closer to the panel's present. Possibly, the present, the sphere of real men, was envisioned as belonging in an era of combat and strife, to which the world in Indo-European myth is reset after the cosmic battle. The panel may thus also illustrate the mythological instigation of rituals (cf. Eliade 1987:68-70). Throughout the journey the three men face dangers and solve giant tasks and seem eventually to be transformed into heroes or gods. Very possibly, the story ends where it started. In fact, three

single ships, which have not been accounted for, are sailing back towards the opening scene.

Conclusion

General traits from comparative Indo-European mythology have here served as a vehicle for the interpretation, supported by more detailed accounts chiefly from Vedic poetry. Although spatially distant, the *Rig Veda* has some clear merits when it comes to illuminating Late Bronze Age iconography because it is contemporary and provides extensive information e.g. on rituals. Yet, when compared with the much more recent Norse poetry in the particular context of rock art, matches have been identified on the structural level as well as in details. I have argued for an interpretation of the Fossum panel as essentially Indo-European:

- The tripartite, spatial organization of the panel: the world of gods, the world of men and the underworld, or, the skies, the earth and the waters;
- The transformation of the three men into: 1) an all-knowing, potent figure associated with the sun; 2) an axe-bearing warrior; and 3) an unarmed figure associated with a deer, reminiscent of Dumézil's three functions: the sun god of the first, the warrior of the second and the fertility gods of the third;
- The bipartite structure seen in the repeated constellation of dual natures within the tripartite structure and inherent in this the right-left, up-down logic;
- The parallelism between macro and micro cosmos seen e.g. in the creation of the universe through the dismemberment of a giant;
- Sacrifice as both a primordial act and the necessary means by which the world order is recreated;
- The cyclic world view and the parallelism of the present, the past and the future;
- The contingency between a female element and creation, and the possible identification of a primal hermaphrodite in the form of a circular *hieros gamos* motif;
- The six sun ships and the six night ships organized in three pairs, which may parallel a Vedic *kenning* related to the Ashvins and the rescue of Bhujyu, the sun.

The paradox that whilst the Ashvins belong in the third function, the Nordic Divine Twins are equipped as warriors, is perhaps indicative of an historically contingent version of a common myth but it may also refer to their role as helpers. Possibly, the narrative describes another generation of gods or legendary heroes, i.e. another pair of Divine Twins. Here, one explanation does not exclude the other, as other twins may have been iconographically interchangeable with Ashvin type twins. The obscure Vile and Ve, only heard of in connection with the slaughtering of Ymir, are examples of such in a later Norse context. On the Fossum panel there is no dichotomy between ritual and myth. Although clearly dramatic as narrative elements, the deeds of the three men appear to be stereotyped. If the men's deeds were primordial mythological acts, they were also, as such, in the logic of Indo-European narratives, matrices for rituals. The Fossum panel is similar to the epic poetry of Homer in the sense that the important events take place in the past. It is both an epos carved in stone and a recipe for rituals.

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GRAVES AND BURIAL MONUMENTS

SETTING HER EVEN STRAIGHTER: FURTHER NOTES ON THE OSTEOLOGY AND NECRODYNAMICS OF THE MESOLITHIC BURIAL FROM BARUM, SCANIA, SWEDEN

Torbjörn Ahlström

Abstract: This paper communicates the results of a reassessment of the original burial position of the Barum burial, Scania, Sweden, dated to c. 8,700 years ago. Based on a thorough analysis of the photographs from Folke Hansen's excavation, it is concluded that the body was placed in an upright sitting position. The notion that the body was leaning backwards is based on a faulty interpretation of the original plan drawn by Hansen. New anatomical data relevant for the interpretation of the burial position is presented. Further, new osteological data supplement the analysis performed by Gejvall in the 1970s, especially with regard to the sex and age assessment of the skeleton and the so-called parturition scars, which played a significant role with respect to the sexing of the find in 1970. Here, a pathological diagnosis is supplied for this condition, osteitis pubis, a condition that is more commonly linked to physical activity in general. Finally, a detailed analysis of the proposed pathological condition in the lower arm reveals that there is no evidence for osteomyelitis, as has been suggested previously.

Keywords: Mesolithic, Barum, osteology, necrodynamics

'There is thus great need of studying the various conditions to which dead bodies are subjected, the forces which tend to displace the parts, and the responses of the parts to these conditions; it constitutes a new branch of science, which may for convenience be called necrodynamics or necrokinetics, the power, or better the movements, shown by dead bodies, human or otherwise.'

Harris Wilder (1923: 198)

Introduction

Is it possible to infer the position of the corpse at the time of burial, based upon the position of the skeletal remains found in connection with archaeological excavations? This is a question that was first addressed explicitly by the American zoologist Harris Wilder (1864-1928). Wilder is to be viewed as one of the pioneers of forensic anthropology in the United States (Ubelaker 2000). His prescient observations of mortuary behaviour based upon the contextual analysis of the skeletal remains are noteworthy (Wilder 1905, 1923; Wilder & Whipple 1917). He identified several agents that have a potential to displace the anatomical order of bone elements from the time of burial to the scene facing archaeologists during the excavation. He referred to this new science as *necrodynamics* or *necrokinetics*. But this did not adhere, and given that some problems reappear with a stunning periodicity, we designate today the very field that Wilder described as 'forensic taphonomy' (Haglund & Sorg 1997, 2002) or *Anthropologie 'deterrain'* (Duday & Guillon 2006). Taphonomy provides us with an understanding that the position of skeletal remains in excavated graves need not be equivalent with the position of the interred corpse. However, this basic fact is often forgotten in archaeological analysis where skeletal remains are naively accepted as unbiased descriptors of mortuary rituals. Today, this is especially true with respect to the Barum/Bäckaskog find.

The Barum Find

In the year 1939, a skeleton was found during construction works at the shore of the Oppmanna Lake in north-eastern Scania, Sweden (Fig. 1). Archaeologist Folke Hansen conducted an

not to be seen in the photograph. The right fibula is nowhere to be seen. The right foot bones are sketched on the excavation plan (cf. Fig. 2a & 2b). However, the photographs only portray the left foot, from the larger tarsal bones such as the calcaneus to the metatarsals, with the metatarsal bones in anatomical order. According to the excavation plan, the right foot was placed in front of the left foot. But an inspection of Figs. 3 & 4 demonstrates that the distance from terminal phalanges of the left foot (not seen on

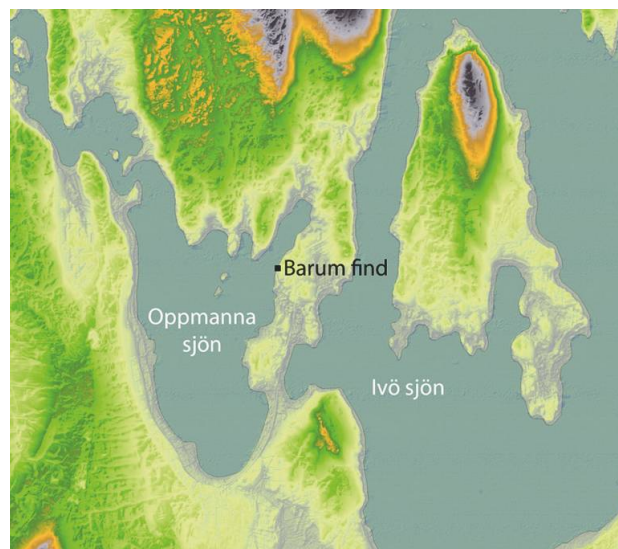


Fig. 1 Map of the Barum find.

archaeological excavation of the site, and christened the find as 'the fisherman from Barum' (Hansen 1941). This assessment was based on the associated archaeological finds. However, the zoologist and osteologist Elias Dahr noted that the skeleton was gracile, warranting a sex assessment as female. However, Dahr was unable to reach a conclusion with regard to sex based on the pelvic bones (Dahr in Rydbeck 1945: 7). In 1970, Gejvall returned to the very same pelvic bones and based on the findings of parturition scars, reassessed the skeleton as a female (Gejvall 1970). The Barum find has been central to the discussions concerning human life during the Mesolithic period (Welinder 1971; Gräslund 1974 - to cite a few). The skeleton is radiocarbon dated to 7895±75 BP (Ua-10667), calibrated 7010-6540 BC (Sten et al. 2000).

The Barum find has been a central component in the exhibition of the Museum of National Antiquities for almost seventy years. For over fifty years the skeleton was exhibited in an upright, sitting position. Thus, the museum chooses to portray a scene depicting the body at the time of the burial, and not the position of the skeletal remains at the time of discovery. This is reasonable as the alternative would have produced an exhibition displaying an indecipherable heap of bones for the audience, where several bones – such as the cranium – would have had to be displayed separately from the skeleton, as we do not know their original positions. In 1996, the exhibition was refurbished and the position of the skeleton was changed from the upright sitting position with flexed arms and hands attached to the shoulders to a position with the body leaning backwards, and with hands crossing over the pelvis. This stirred up a debate concerning what could actually be inferred from Hansen's original report, especially with regard to the position of slotted bone point (Hanlon & Nilsson 2006). In 2005, I was contacted by the staff of the Museum of National Antiquities. The exhibition was to be rebuilt into a new permanent exhibition. With Hansen's original report, three black-and-white pictures and versions of the same excavation plan, I set out with the task to infer whether the body was interred sitting upright, or leaning backwards as reconstructed in 1996. My conclusion was that there was nothing to support the proposition that the body was interred leaning backwards. This resulted in the 'new' position when the exhibition reopened (cf. Nordström 2007). The grounds for the dismissal of the 'leaning backwards hypotheses' are presented below.

Two papers have recently been published dealing with burial position of the Barum find. Sten & Welinder (2007) approached the documentation with an *Anthropologie 'déterrain'* perspective, and concluded that the body was interred leaning backwards (cf. Sten & Welinder [2007], Fig. 5). Nilsson also presented an *Anthropologie 'déterrain'* analysis of the documentation and arrived at the conclusion that the body was interred in an upright position, but possibly leaning backwards as reconstructed at the museum in 1996 (Nilsson 2006: 45). Even though we had all examined the same documentation, there were unsettling inconsistencies among us based on the fact that both Nilsson (2006) and Sten & Welinder (2007) accepted Hansen's excavation plan without reservations. I did not. I found several discrepancies between Hansen's excavation plan and the photographs from the excavation and thus questioned several anatomical features that my colleagues had accepted at face value.

The Skeletal Position of the Barum Grave

The first question to be addressed is how reliable is the excavation plan (Fig. 2a)? It is signed by Folke Hansen (i.e. F.H 1939), drawn

in 1:10 scale with the zero-point (or datum) corresponding to the bottom of the grave. This plan was redrawn in ink with traces of an original master drawn in graphite. The graphite is clearly visible in places, such as the mid-diaphysis of the right femur. There are also traces of erasing on this plan. Thus, I concluded that this version (i.e. Fig. 2a) of the excavation plan was the original, probably produced in the field. Another plan was also produced (Fig. 2b). This is a copy of the master, and there are slight, but important, differences between them. In one plan (Fig. 2b), the right lower arm is not indicated at all; in the other (Fig. 2a) the right lower arm is flexed at the elbow with the hands resting in the lap. Apart from the excavation plan, there are three photographs from the excavation (Figs. 3-5).

The first inconsistency relates to the position of the right forearm. Sten & Welinder (2007: 152), fully accepting the excavation plan, state that '[t]he arms are not particularly problematic. The woman's hands were in her lap'. Nilsson writes concerning the right arm that 'the forearm had been placed in front of the abdomen and pelvis' (Nilsson 2006: 40). The right lower arm is superficially sketched in Fig. 1a compared with the left lower arm. In the initial master made of graphite, Hansen meticulously filled in the contours with ink. This is evident at the point where the left lower arm crosses the left pelvic bone. Here a hiatus in the inking indicates that the left lower arm is to cross the pelvic bone. This is not the case with the right lower arm. Here the inked lines representing the lower arm cross the inked lines of the pubic bones. The photographs from the scene, however, depict the right radius adjacent to the left knee. I have enlarged relevant portions of the photographs to stress this point further. In Fig. 4 (panel 1) the distal, palmar part of the radius protrudes behind the femur (A). The distal articular surface of the right radius is clearly visible in Fig. 5 (panel 1). Although the poor quality of the photograph restricts us from accentuating this point further, there are indications that the styloid process of the right ulna is present adjacent to the radius (Fig. 5). Thus at the time of the excavation, the right lower arm of the Barum find was extended and positioned frontally, parallel to the right femur. This find demonstrates that her right arm was not flexed, with her right hand in her lap, as suggested by the plan and advocated by Sten & Welinder (2007) and Nilsson (2006). At the same time, this finding deprives Hanlon & Nilsson (2006) of their slotted bone point, which, according to this analysis, represents the shaft of the right radius. It is evident that in Fig. 2a the position of the lower arms was drawn from an imperfect memory.

With respect to the lower extremities, Sten & Welinder (2007: 152) state that 'both legs were on the bottom of the pit, one upon the other' and 'with her legs bent and leaning sideways to the right'. In a similar vein, Nilsson (2006: 41) states that '[t]he tibia is also fragmented and only the distal part appears in situ'. One feature that merits a critical comment is the lower portion of the right tibia, portrayed in Figs. 3 & 4, lying immediately in front of the left tibia, and not embedded in the sediment. The medial malleolus of the tibia is pointing forward towards the adjacent stone, as a brighter hook-shaped object in the photograph. Still on the lower portion of the right tibia, towards the camera, there is a triangular darker region representing the *incisura fibularis*, the notch where the fibula articulates with the shin bone distally. Thus, the bone has been rotated so that the posterior part of the bone is actually facing upward, and we would expect that an articulated foot – if present – would project downwards, into the earth. This is not to be expected if both feet were placed together. According to this, the medial malleolus would face the left foot, and the *incisura fibularis* would be embedded in the sediments, and subsequently

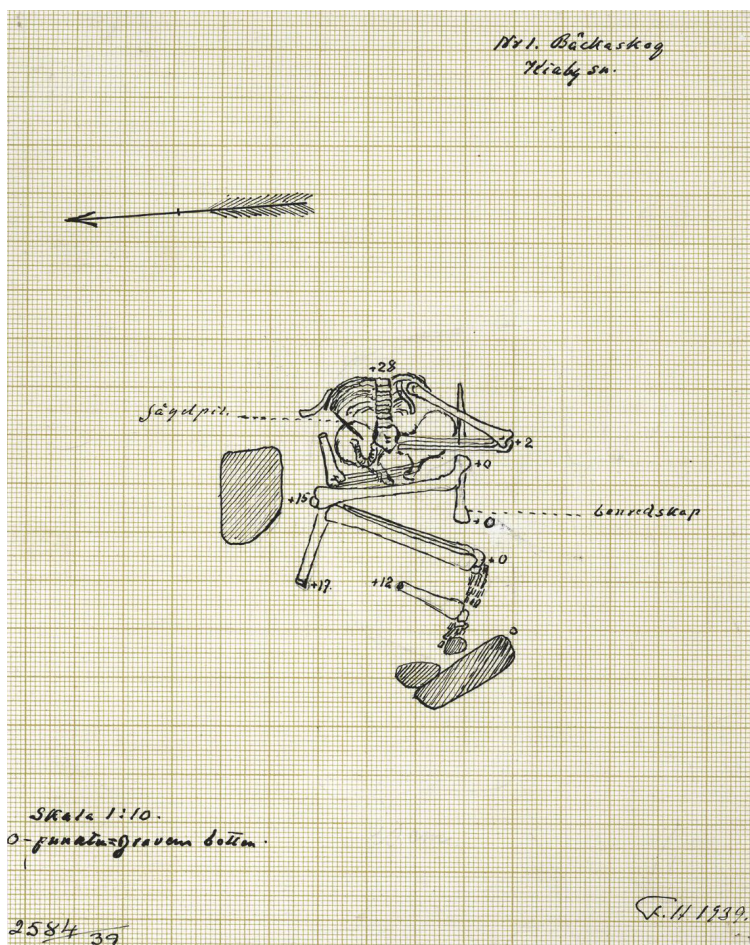


Fig. 2a Original plan of the Barum burial, SHM 22438.

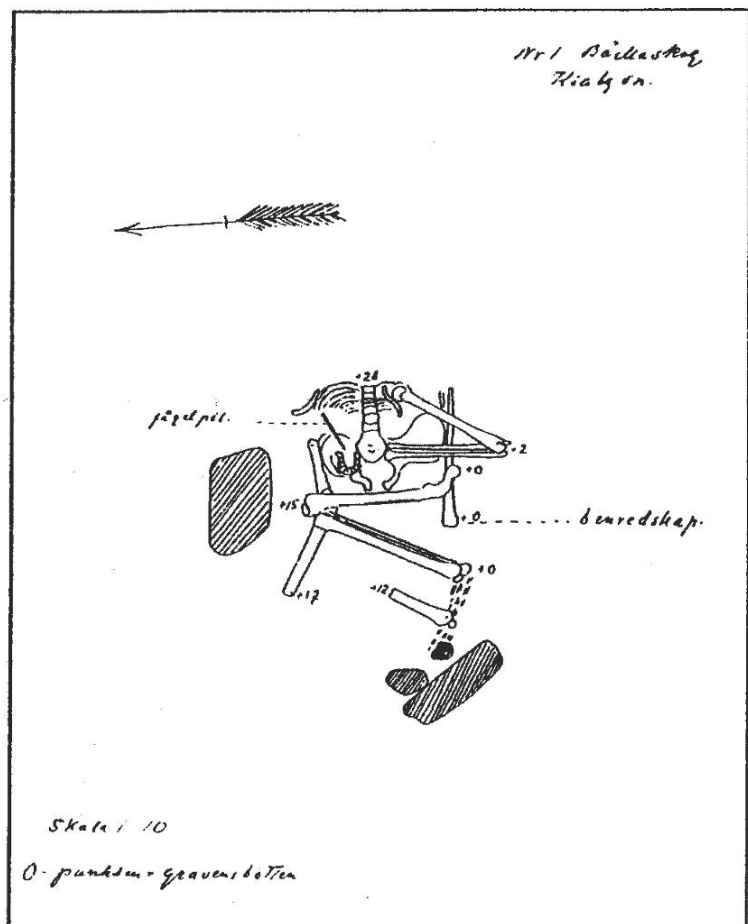


Fig. 2b Another version of the plan, note the lack of a right lower arm, SHM 22438.

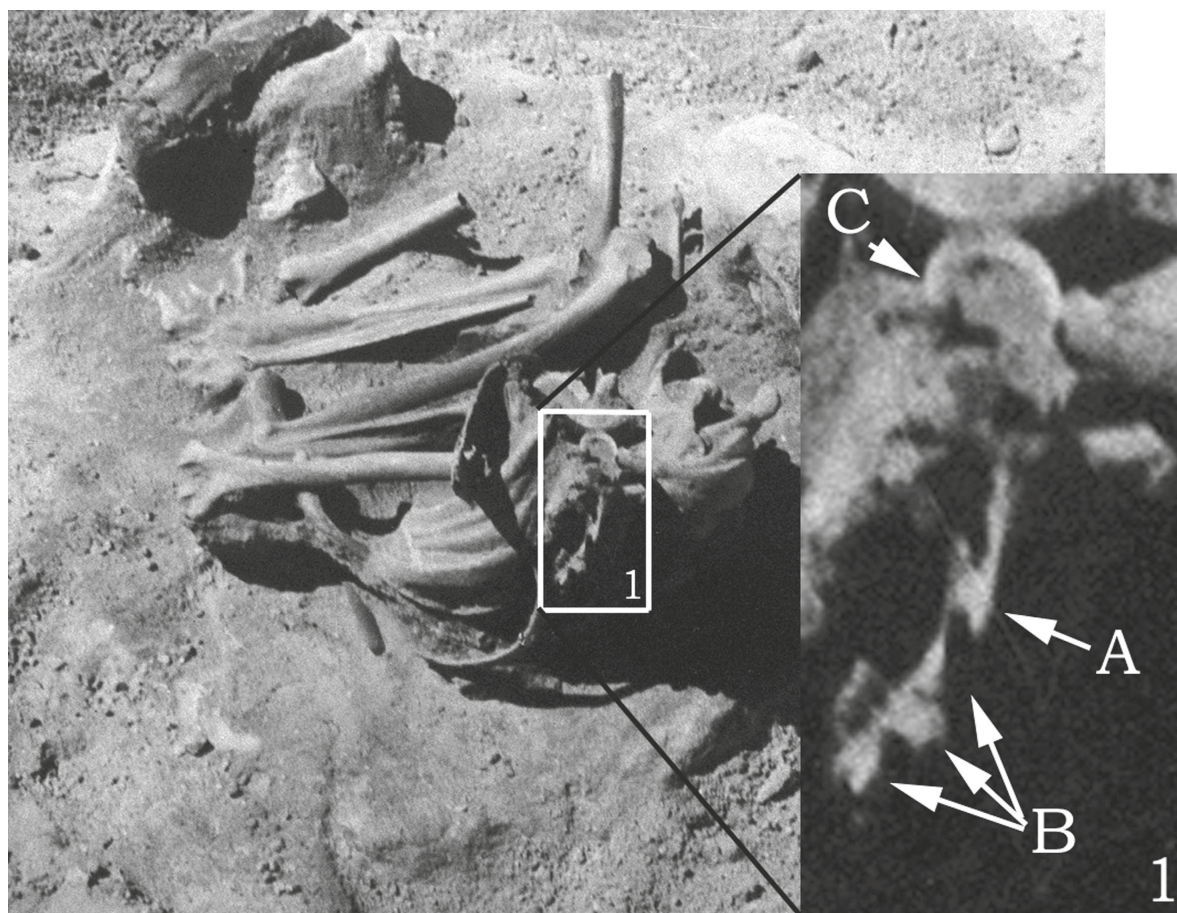


Fig. 3 Picture of the Barum burial, view from the back. Photo: Folke Hansen, SHM 22438.

the photograph) and the stones in front of the grave is so short that it is impossible to fit a right foot in this space, as suggested by Hansen's plan. Contrary to Sten & Welinder (2007) and Nilsson (2006), I find it impossible to interpret the right tibia as an *in situ* find; it must have been placed there during the excavation, maybe prior to Hansen's arrival at the site. As depicted, it lacks anatomical sense. Given the lack of associated foot bones and a right fibula, it is an open question where the right foot was positioned, and hence, the original position of the right tibia.

Sten & Welinder (2007: 152) write that 'she had not been placed sitting upright, but rather leaning back against the wall of the burial pit'. The notion that the body was buried leaning backwards rather than in an upright sitting position was originally advanced by Elisabeth Iregren (1991). Crucial to the question whether the body was sitting upright or angled, as advocated by Iregren, is the height above the zero-plane for the spine reported on the plan by Folke Hansen, namely 28cm. Iregren interpreted this height as equivalent with the height of the first cervical vertebrae (atlas or C1) above the zero plane. The relatively low height of 28cm must produce a body leaning backwards, it was reasoned. However, this is a model of the skeleton that fits poorly with the plan of Hansen, where the distance in the horizontal plane between the sacrum and the abovementioned vertebrae – with the height 28cm – is not more than 13cm. Body proportions are subject to variations. But if we accept the following approximation, that a spinal column represents some 34% of the total stature (Fully 1956), we estimate the length of her spine (C1-S1) to $0.34 \times 155 = 53\text{cm}$. It would seem like a simple exercise of the Pythagorean

Theorem to conclude that with one of the catheters set to 28cm (the height of the atlas above the zero-plane), and the hypotenuse set to 53cm (the approximate length of the spine), the last catheter must be ~45cm (i.e. the horizontal distance between the sacrum [S1] and atlas [C1]). As we have already seen, this distance is no more than 13cm as judged by the plan. Conversely, if the body was sitting upright, with one of the catheters set to 13cm, and the hypotenuse set to 53cm, the last catheter must be ~51cm (i.e. the height of the spine above the zero-plane). This is much higher than the reported height. The geometry of the articulated skeletal elements as reported negates any attempt to fit it to a leaning backwards position.

Crucial here is a critical analysis of the pictures taken by Hansen. Enlarged portions of the top of the spine can be seen in Fig. 3 (panel 1), Fig. 4 (panel 2) and Fig. 5 (panel 3). The shape of the vertebral body discloses that this is a thoracic vertebra, not a cervical. The shape of the body is circular, not triangular as seen in the upper thoracic vertebral bodies (Fig. 3:1:C). In Figs. 3:1 and 4:2 the *processus spinosus* of the vertebrae are shown. Here we see that the topmost vertebra is furnished with a long, straight and narrow spine (A). But more importantly, the following vertebrae of the articulated spine are subjected to a metamorphosis towards shorter, hatchet-shaped spinous processes, especially the last spinous process (B). This is the telltale sign of the lower part of the spine, towards the lumbar region. This means that the topmost articulated vertebrae represent a specimen from the middle-lower region of the thoracic part of the spine (cf. Fig. 6). This finding – i.e. that the uppermost exposed vertebra derives from the middle



Fig. 4 Picture of the Barum burial, view from the side. Photo: Folke Hansen, SHM 22438.

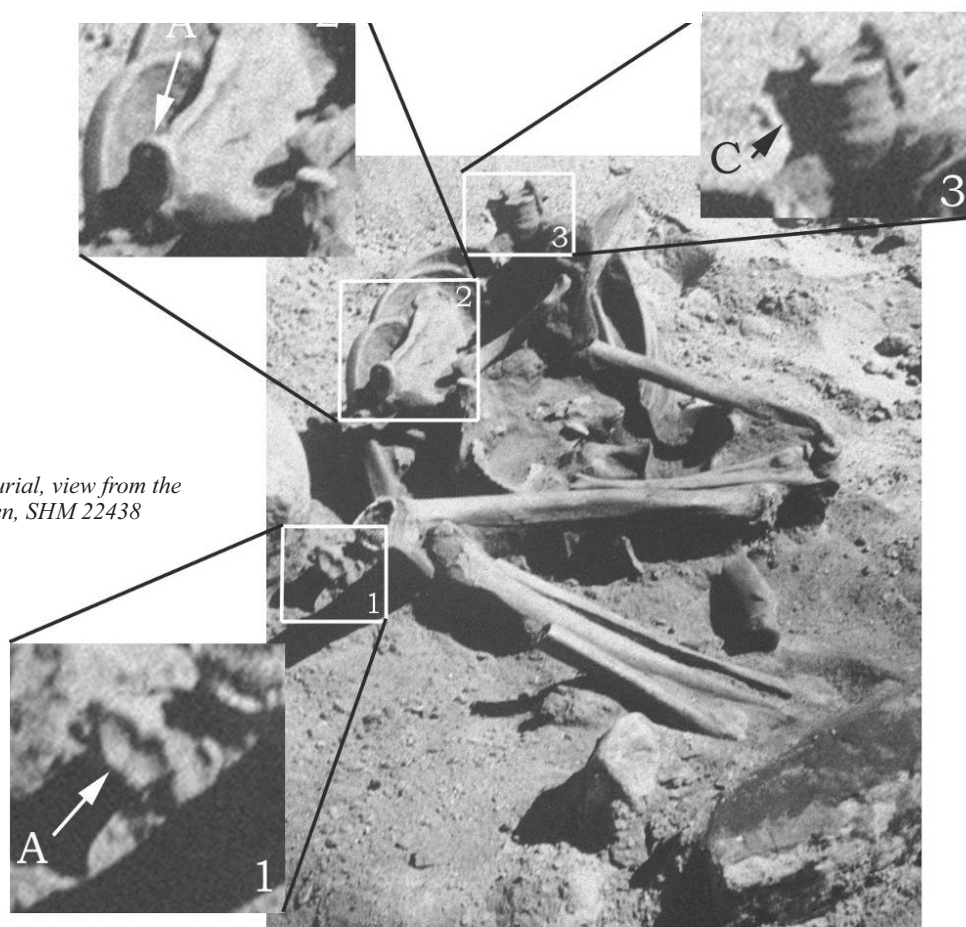


Fig. 5 Picture of the Barum burial, view from the front. Photo: Folke Hansen, SHM 22438

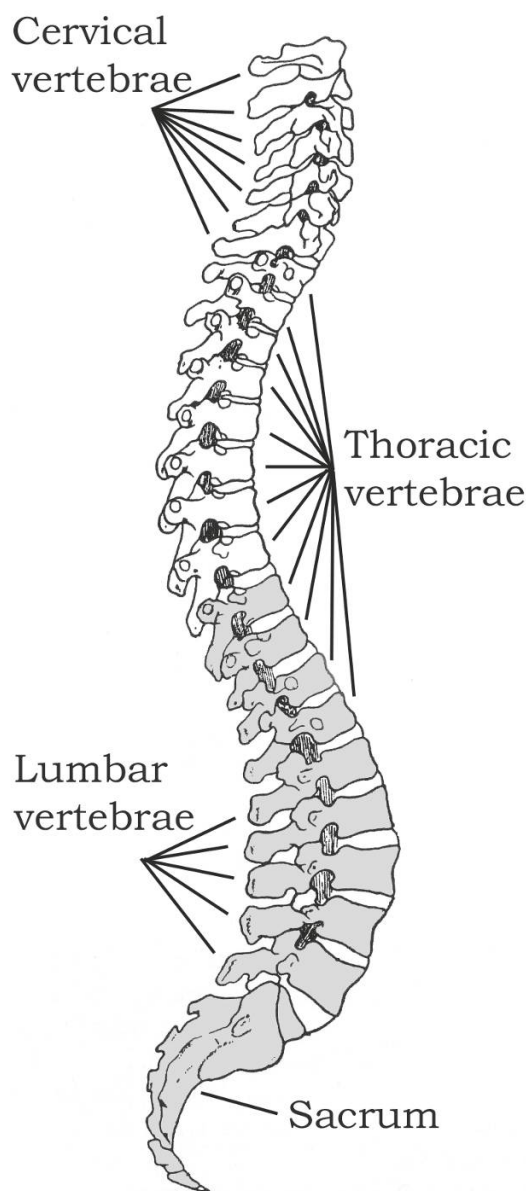


Fig. 6. Human spine. The vertebrae shown in grey are the ones that were probably found in situ in the Barum burial.

portion of the spine – negates any attempt to reconstruct her burial position as slanting backwards.

The fact that the Barum skeleton was buried in an upright sitting position, rather than slanting backwards, eloquently explains why we find both scapulae and the mandible in front of the spine. Further, objects seen between the mandible and the spine in Fig. 5 resemble vertebral bodies that must come from the disarticulated spine. Finding these in front of the spine strengthens our interpretation that the body was sitting upright (cf. Nilsson 2006). This is further demonstrated by the position of the two shoulder blades. These are found within the confines of the cavitated thorax with the articular surfaces pointing towards the bottom of the grave (Fig. 4: panel 3, A, Fig. 5: panel 2, A). It is likely that the left humerus was articulated with the scapula during the decomposition, as they have been found in close proximity. This is not the case with the right upper arm. Here, the glenoid cavity of the right scapula is positioned approximately at the mid diaphysis of the humerus. The full extent of the right humerus

cannot be discerned, as it has been fractured. However, it is not likely that it was articulated with the scapula. It is impossible to reconcile the dynamics of the shoulder blades, mandible and the disarticulated vertebrae with a model of the grave, where the body was slanting backwards, as originally advocated by Iregren (1991), and elaborated by Sten and Welinder (2007). However, these finds fit well with a model that presupposes that the body was placed in an upright sitting position, which was also the conclusion of Nilsson (2006).

Osteological Notes

Apart from Elias Dahr's osteological analysis referred to by Rydbeck (1945), Gejvall (1970) was the first osteologist to give a proper treatment of the sexual characteristics of the skeleton. The most important trait suggesting female sex according to him was the discovery of so-called childbirth, or parturition, scars in the pelvis (Gejvall 1970, Fig. 4). Parturition scars are defined as pits, cavities and depressions located on the dorsal surface of the pubic bone and below the auricular surface of the ilium (*sulcus preauricularis*), posterior to the auricular surface (*sulcus postauricularis*) and partly understood as traumatic in origin and possibly associated with parturition (Putschar, 1931). This finding seemingly settled the question regarding the biological sex of the skeleton, and since then this topic has not been addressed. But how valid is this conclusion? Angel (1969) advanced the view that these scars were in fact remnants of parturitions and hence they could be used to estimate the number of pregnancies (10-12 pregnancies in the case of Barum according to Angel, cf. Gejvall 1970: 289). Angel's point of departure prompted an interest among anthropologists to elucidate the relationship between scars and the number of pregnancies. However, the so-called parturition scars proved to be elusive and there were several authors reporting a weak correlation between these changes and full-term pregnancies (Stewart 1970; Kelley 1979; Snodgrass & Galloway 2003). Authors such as Ashworth et al. (1976) related the osteological characters to a pathological condition known as *osteitis pubis*, an inflammatory condition involving the pubic symphysis and adjacent anatomical structures. The infectious condition is referred to as *osteomyelitis pubis* (Pauli et al. 2002), and it may be difficult to arrive at a differential diagnosis between the two. Although this condition had been described in the literature since the 1920s, mainly within the fields of urology and obstetrics, it was not until this century that clinicians, especially within sports medicine, started to take an interest and devote resources to the study of *osteitis pubis* (Judd 2010). Central to the discussion of the aetiology of *osteitis pubis* in sports medicine is muscle imbalance, pelvic instability and chronic overuse trauma (Mandelbaum & Mora 2005). For instance, the pubic bone serves as an anchor for muscles that both flex the torso (*m. rectus abdominis*) and a muscle that draws the leg inward toward the median axis of the body (*m. adductor longus*). These muscles can act antagonistically with respect to each other, straining the pubic bone and producing microtrauma (Miller, Schultz & Anderson 1987). Furthermore, instability in the pelvis girdle produces shearing movements between the two halves of the pelvis at the symphysis, and may produce a condition resembling osteoarthritis with an eroded *symphysis pubica* (Judd 2010). As a corollary to this, ageing the pubic bone can be problematic (see below). I would argue that the osteological changes seen in the pubic bones of the Barum find are primarily related to a pathological condition, *osteitis pubis*. The aetiology of this condition is probably multifactorial, but with physical strain as an important factor. But as this pathological condition can affect both females and males, it is audacious to use these as the primary argument for a female sex.

Gejvall (1970) noted the diminutive stature (155cm) of the Barum find and argued that this was indicative of female sex. However, it is not feasible to use stature as a sexual diagnostic criterion, as stature is prone to natural selection, and we still have not grasped the variation in the earlier Mesolithic. The greater sciatic notch was described by Gejvall as U-shaped, a character suggesting male sex. However, to this I can add that the *arc composé* is double, suggesting female sex. Following Phenice (1969) the pubic bone is furnished with a ventral arc, followed by the existence of a subpubic concavity, both structures indicative of female sex. However, the medial aspect of the ischiopubic ramus is flat, indicative of male sex. The sexing of the pelvic region of the Barum find is not straightforward, but the majority of the characteristics indicate female sex. Another feature of the find that was used in the discussions regarding sex was the cranium, a cranium that was thought to be robust by Gejvall and Dahr. However, as the number of Mesolithic finds has increased since, it is obvious when compared to the variation known today that the cranium of the Barum find is not especially robust in a Mesolithic context. For instance, finds such as Hanaskede, Västergötland (Vretemark 1996) and Bredgården, Västergötland (Borrmann et al. 1996) are particularly robust with developed secondary sexual characteristics. Compared with these finds, the Barum cranium is slender. In fact, the Barum find is more similar to the oldest skeletal remain from Sweden, the 10,000 year old find from Österöd, Bohuslän (Ahlström & Sjögren 2009), as well as the well-preserved grave nr. 4 from Tågerup, Skåne (Ahlström 2001, 2003). Sorting out the characteristics that are not directly pertinent to the question of sex, such as the pathological condition of the pubic bones as well as the modest stature, we do have characteristics in the pelvic bone that identify the Barum find as a female. This identification is strengthened with reference to the growing database of Mesolithic skeletal remains.

The age at death of the Barum find was assessed as 40-50 years according to Gejvall (1970) based on the suture closure and the attrition of the teeth. Borrmann & Alxandersen (Sten et al. 2000: 79) concludes, based on a renewed analysis of the dentition, that the age was probably somewhat younger, 33-40 years. What about the rest of the skeleton? The pathological condition affecting the *symphysis pubica* negates any attempt to use this characteristic for ageing. The *facies auricularis* of the ilium is preserved and can be classified for age changes. There is no billowing, the *facies* is covered with dense bone lacking micro- and macroporosity, with a sharply defined apex. According to the original analysis of ageing the *facies auricularis* by Lovejoy et al. (1985) these changes correspond to an age of 40-44 years. However, Buckberry & Chamberlain (2002) revised the method and following this approach with a total score of 12, the changes in the *facies auricularis* correspond to a mean age of ~51 (± 14.5) years. The metamorphosis of rib-ends was studied as well (Iscan & Loth 1986). A distinct pit has developed, with a sharp and delimited border corresponding to phase 5. In a modern reference sample, this phase corresponds to 33-46 years of age. Cranial suture closure was also studied, even though this aspect of skeletal development useful for ageing has been questioned repeatedly. Following Meindl & Lovejoy (1985), the composite score for the ten ectocranial lateral-anterior suture landmarks is 9, corresponding to a mean age of ~52 (± 12.5) years. To summarize, the age estimations performed seemingly corroborate the findings of Gejvall, i.e. the Barum female was 40-50 years of age at death based on osteological criteria.

So far, we have no indications with regard to the cause of death. Sten et al. write that 'at the right wrist, the lower portion of the



Fig. 7 X-ray of the right lower arm of the Barum find (SHM 22438). Note the rectangular features within the marrow cavity (arrow)

radius [sic!], there are signs of an infection – an osteomyelitis' (Sten et al. 2000: 77, author's translation). Osteomyelitis is an infection involving the bone marrow and cavity. Now, the affected distal part of the right ulna – not the radius – is represented as a brighter portion on the x-ray. This was interpreted as indicative of a pathological condition. However, a closer scrutiny reveals rectangular shadows within the radiolucent portion (Fig. 7). My interpretation is that these rectangular fields represent wooden sticks used to fixate the distal portion to the diaphysis during

the initial conservation of the find, probably by Elias Dahr. The brighter portions represent a mending of the bone with plaster of Paris. This is not to be confused with a pathological condition.

Setting her even Straighter

In the paragraphs above, I have added to the discussion of this find a critical review of the documentation at hand, and in the process discovered the right forearm, but lost her right foot. Clearly, the plan given by Hansen cannot be accepted uncritically, as it is contradicted by his own photographs. I have also assessed the proposal that she was buried leaning backwards, but did not find evidence for this. Some new data with respect to the sex and age of the skeleton has been presented, along with a reassessment of the so-called parturition scars as a pathological condition known as *osteitis pubis*. This condition is linked to physical activity in general. Nevertheless, the condition is crippling and she would have had problems walking, the latter being important in a society based on foraging.

What can be inferred with respect to the burial of the Barum female some 8,700 years ago? She was placed in a pit, sitting upright with her legs flexed (Fig. 8). The width and depth of this pit as dug at the time is difficult to reconstruct. We have no evidence for the placement of her right foot, other than it cannot have been placed in front of the left foot. Here I assume that it was placed alongside the left, but at a distance. Her head was leaning forward, producing a spine with the cervical vertebrae bending forward. The original position of the arms is more difficult to assess, being affected by the disarticulation of the corpse. It is possible that the left arm was resting on her stomach, but it is equally likely that it was flexed, with the hands resting on her shoulder or knee. The right arm is more difficult to assess, but it was probably arranged as the left. It is not unlikely that the corpse was covered with a hide, or that she was buried with her clothes, although there are no finds of paraphernalia such as animal tooth pendants to support this. Following the positioning of the dead woman, the pit was filled with earth. Already at this stage, with a body possibly unaffected by *rigor mortis*, we anticipate movements of the body. The left leg may have been pressed against the right leg already at this stage, but the torso and head may also have been pressed by the weight of the in-filled sediments towards the northern wall of the pit. Sitting upright and crouched, there would have been hollow cavities within this body of earth that would have been subjected to in-filling as the decomposition of the corpse progressed. The scenario for the disarticulation of the skeleton is difficult to assess. It depends on several variables, one crucial one being the original depth of the grave pit, and hence the condition for bacterial growth. That we have necrodynamical features within this burial is evidenced by the cavitation of the thorax and the mandible found on the same level as the pelvic bones. It is possible that this cavitation was the result of a collapse of the right shoulder, as the humerus is significantly detached from the scapula, something that cannot be seen in the left shoulder.

Necrodynamics, forensic taphonomy and *Anthropologie 'deterrain'* are plagued by the fact that the knowledge is based on interpretations of archaeological contexts and not controlled experiments, since the latter is difficult to achieve due to ethical reasons. But computer modelling of the decaying corpse could be one way to advance the field. Parallel to the work presented here, I have used photogrammetry to produce a 3D model of the Barum grave based on the three photographs and a selection of landmarks on the skeleton. A 3D scanning of the original bones



Fig. 8 A tentative reconstruction of the initial placing of the Barum female.

would make it possible to reconstruct the context of the find with an unprecedented level of detail.

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LOCAL LOGIC, PASSAGE GRAVES AND THE NEOLITHIC LANDSCAPE OF FALBYGDEN

Tony Axelsson

Abstract: Based on three recently excavated passage graves this article discusses relationships between nature, megaliths and people in the Neolithic landscape of Falbygden, western Sweden.

Keywords: Neolithic, Falbygden, passage graves, landscape

Introduction

In order to make progress in archaeology borders need to be crossed, moved or perhaps ignored. Sometimes these borders consist of physical objects as in Figure 1 - and sometimes the borders are far more subtle than a fence, and perhaps mentally constituted.

Archaeological breakthroughs sometimes come when least expected, and often the results were not anticipated when one started pursuing the idea. I was still a student in 1994 when Kristian Kristiansen was appointed professor at the Department of Archaeology. Kristian came to Gothenburg with a lot of ideas and, as it happened, I became involved in two projects that probably would not have come to life without Kristian's energy and enthusiasm. He was the co-founder of the coast to coast project that has resulted in many new insights about the Swedish Stone Age. In my own research area, Falbygden, a number of studies have been published (see for example Ahlström 2004, 2009; Axelsson 2010a; Sjögren 2003). The very first project that Kristian started in 1995 was a restoration and conservation project

of passage graves, even though this project hasn't grown to the same extent as comparable work in Denmark (see Dehn, Hansen & Westphal this volume), and much new information has been gleaned over the years (Axelsson, Heimann & Sjögren 2003; Axelsson 1998, 2000; Axelsson & Jankavs 2006; Sjögren 2008).

So, Kristian, this short rhapsody has been composed to wish you a happy anniversary. It contains some results from the inquiries in Falbygden, work that has perhaps succeeded in moving the mental borders of how we regard Stone Age society. When you read it I trust that you are already out there breaking your way through the landscape of archaeology.

Landscape, nature and research of Falbygden

Falbygden in central Västergötland, see Figure 2, is home to one of northern Europe's largest concentrations of megalithic graves from the Neolithic period. Above all, it is the roughly 250 passage graves associated with the Funnel Beaker Culture, from about 5,300-5,000 years ago, that are visible as monumental constructions in the landscape. These passage graves are often located in groups,



Fig. 1 Breaking in or out? Kristian Kristiansen climbing the fence to one of the hillforts at Los Milliares, Spain in 2002.

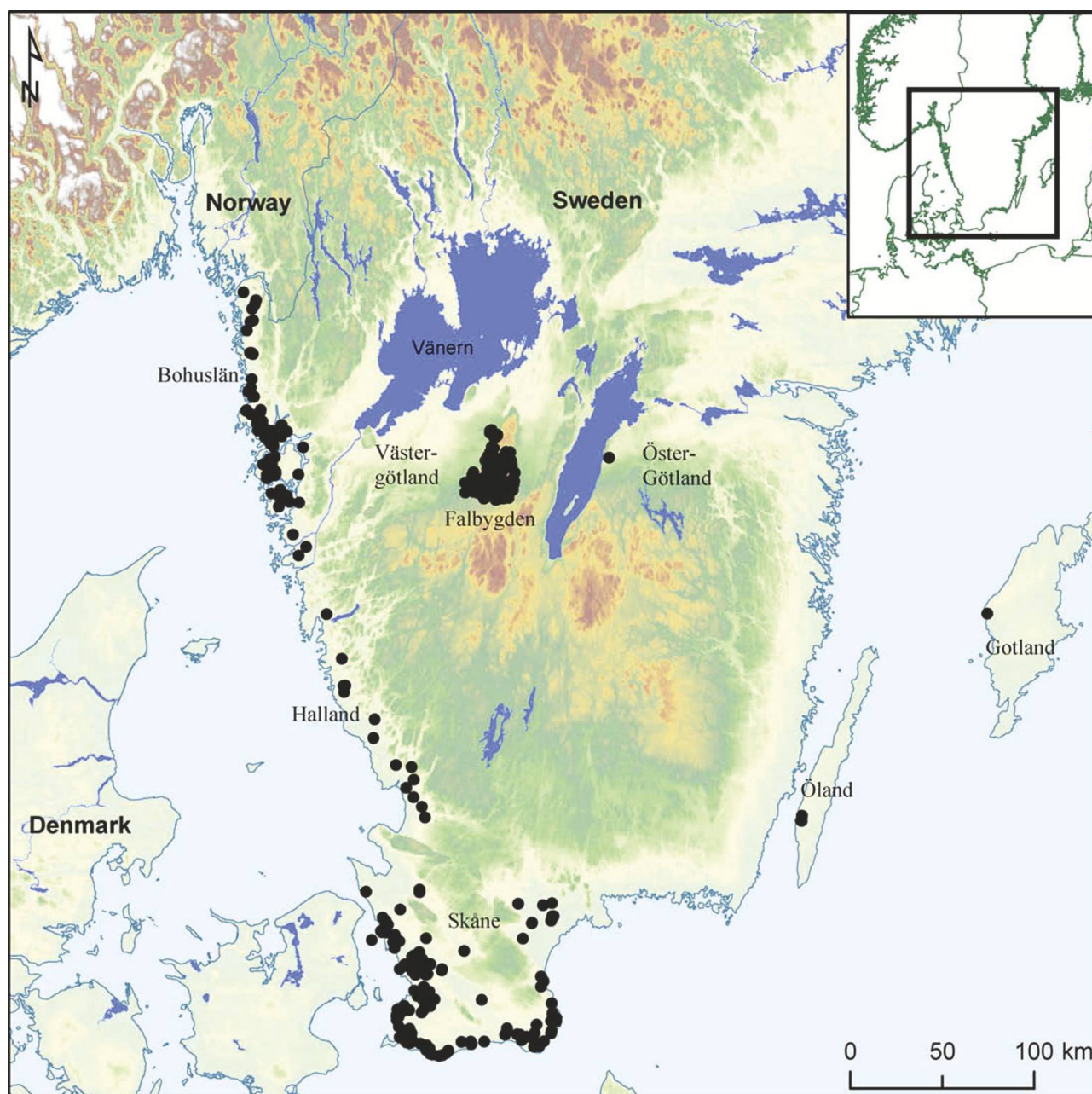


Fig. 2 Southern Sweden with passage graves. From Sjögren, Ahlström & Price 2009.

and are oriented along the landscape's characteristic projections in rows or small clusters. They are distributed over almost the entire Falbygden limestone plateaus, but with concentrations in e.g. Karleby, Falköping and Gökhem. Often, they are on low ridges or near breaking points in the landscape where several types of rock meet. In southern Falbygden, several passage graves are near large marshy areas. These areas were shallow lakes or more or less open water when the passage graves were built, and some of them were actually surrounded by water (Sjögren 2003; Axelsson 2010a).

Falbygden is a complex natural and cultural landscape that has many properties that are unique for Sweden. These have been described by numerous authors with varying starting points (see for example Moberg 1950 and Fries 1958). Here, I will only summarize and try to describe the main points in order to provide the necessary background for understanding the landscape of the passage graves. The area forms a N-S triangle, about 50 km

x 30 km, with the broadest part in the south, even if the more exact delimitation can vary somewhat depending on the starting point. From a physical geography perspective, the bedrock often constitutes the delimitation. Falbygden is one of Väster-götland's three Cambro-Silurian areas where the primary rock is covered by several horizontal layers deposited on the bottom of an ancient sea during the Cambrian, Ordovician and Silurian periods, 400-600 million years ago. Above the gneiss the bedrock consists of sandstone, alum shale, limestone and clay shales. The characteristic plateau mountains were formed through a hard volcanic mass, the diabase, being deposited like a protective cover over the older and softer rocks 280 million years ago. The biggest plateaus of Mösseberg, Älleberg, Varvsberget and Billingen are central features of the countryside of Falbygden. Between the mountains lies the fertile, rolling high plane called Falan, which has given its name to the entire district. The north-south running Åsle valley divides the area into two parts.

At different times, the passage graves of Falbygden have attracted attention and have been the subject of a good deal of archaeological research. A large number of surveys and excavations were carried out between 1860 and 1910. Many of the leading Swedish archaeologists of the time were active here. Questions involved basic issues such as dating and source of livelihood, but studies of cultural context and race were also important. Skull measurements were prominent in the discussions. The number of excavations declined considerably during the remainder of the 1900s. This period largely involved inventories and restoration work (see Axelsson 2010a: chapter 3 with references). There has been a resurgence of archaeological interest in the district's passage graves since the mid-1980s, including several dissertations, studies and excavations dealing with different aspects of the Neolithic landscape, society and material culture (Sjögren, 2003, 2008, 2010; Persson & Sjögren 1995, 2001; Sjögren, Ahlström & Price 2009; Axelsson 2010a, 2010b; Ahlström 2004 & 2009; Axelsson, Heimann & Sjögren 2003; Axelsson & Jankavs 2006; Axelsson, Strinnholm & Ramstad in press; Blomqvist 1989; Tilley 1993, 1996, 1999).

Symmetry and colour¹

In recent years there have been excavations and restorations on three separate passage graves in the Falbygden area (Axelsson & Jankavs 2006, Forthcoming a, Forthcoming b). The passage graves Karleby 105, Karleby 82 and Falköping Östra 1 are all situated within the municipality of Falköping close to the city of Falköping.

The overall and primary aim was to restore, as far as can be done, the external appearance of the monument, including the surrounding mound in general. This meant removing secondary depositions like clearance stones – 400 tonnes on the first one – and waste or rubbish, and also taking down trees and undergrowth. The intention was to make the graves more accessible, physically and mentally, to the public.

The other part of the project was to investigate special areas or components of the graves and the construction. In all of our excavations we have removed the topsoil of the mound down to the first layer of stone packing nearest to the chamber and passage.

This was primarily done at Karleby 105 to find sections of the chamber walls that were not visible. We discovered that the area nearest to both the chamber and the passage consisted of stone packing made of flat pieces of red limestone. Beyond or outside the red stones the packing was, for the most part, an uneven mixture of grey limestone and other kinds of rocks.

When investigating the second and third passage grave we deliberately looked for this phenomenon and found it in both cases. At all three passage graves a trench was dug through the mound, from the mid section of the west wall of the chamber and out to the perimeter of the mound. This provided a cross-section of the mound and enabled us to study how it was constructed and what materials were used. In short, this manoeuvre revealed, again in all three cases, that the mound was mainly built of boulders/rounded stones of granite of about the same size. An exception was the inner part, nearest to the chamber, where we had discovered the superficial red limestone. The section showed that the red

stones formed a wedge. This triangular form was widest at the surface, narrowing downwards. Moreover, the stones were laid flat and overlapped like roof tiles. The trench was excavated to and under the Neolithic ground level. The differences in stone packing combined with the various strata of the earth filling were interpreted as traces of consecutive steps in the construction of the grave. This feature was present at all three passage graves that were investigated.

The overlapping structure of the stones can be seen as a way to drain off water. This feature is well known from Denmark, where it has been interpreted in the same way (Dehn, Hansen & Kaul 2000). But the question still remains: Why was the gap between the walls of the chamber and the mound filled up with exclusively red limestone? The two colours of limestone indicates different geochemical composition (red = ferrous oxide) and consequently different qualities and characteristics. The red stone is softer and we noticed that the surface dissolved more easily than the surface of the grey stone. This, in turn, caused red stones to stick together more easily and make up a homogeneous mass. Maybe these were qualities the megalith builders were looking for?

The excavations carried out at the three passage graves have brought some interesting facts into focus. At Karleby 105 we noted that the limestone slabs that made up the chamber walls were mostly of red limestone with the exception of two grey stones that were placed in the south respectively in the north of the eastern chamber wall. In Falbygden there has not yet been a thorough study of how colours differ or create symmetrical patterns. We did note that on Falköping Östra 1 there was another symmetrical pattern: here the most southern and northern stone in the west wall of the chamber was of red limestone whilst the others were grey. At Falköping Östra 1, see Figure 3, we observed that all the uprights in the passage were split in two and the twin halves were positioned in the passage to mirror each other.

These symmetrical patterns and practices deserve a more thorough study, but from these preliminary results we can already conclude that the construction is more complex than had previously been anticipated (Axelsson & Jankavs forthcoming).

Local logic, variation and complex landscapes

The three latest excavations have raised a number of interesting questions for further research and have also pointed to some preliminary results that may affect the way we should view these monuments and their construction. The passage graves are built all over Western Europe and in different parts of Sweden as well. On different levels there are similarities and differences in construction. The passage graves in Falbygden seem to have a number of individual or local, functional as well as non-functional, features that disappear or are not acknowledged when the graves are studied on a more general or regional level (Axelsson 2010a). As a strategy for dealing with the differences and variation in construction the term 'local social logic' was introduced (Axelsson 2010a). This concept and term facilitates a more inclusive approach to prehistory, allowing for a perspective in which both archaeology and the prehistoric material can be viewed as a result of varying, and potentially multifaceted, social logic.

Thus, by addressing the material culture from the perspective that the monuments are constructed on a local level it is possible to better analyse and process local variation. For example the Swedish passage graves in Scania and in Falbygden belong to the Funnel Beaker Culture. In that respect they are explained culturally, chronologically determined and more or less put into

¹ The results presented here are mainly from the three latest excavations of passage graves in Falbygden, conducted by the author and Peter Jankavs. The discussion in the paper is of course dependent on and a result of the ongoing work involving these three megaliths in which Peter Jankavs has a significant role, see list of references.



Fig. 3 The passage grave Falköping Östra 1. The uprights in the passage were split in two and the twin halves positioned in the passage to mirror each other.

the same box. However, a closer and more detailed look at the material found in the chambers reveals differences in artefact types and composition. These differences tend to evaporate or are explained as anomalies when we employ generic categorisations like *Funnel Beaker Culture* or *Megalithic*. In this way both the general and/or common features may be taken into account while variations (i.e. the unique and local) are tapped and used as an asset for interpreting a site.

This is a way of conducting archaeology where the landscape, passage graves or other archaeological features are not regarded as static, but instead as changing and temporal. It is suggested that instead of putting energy into conserving or preserving archaeological cultures, archaeology should focus on local differences and variation (Axelsson 2010a). This will enable a discussion that transcends our archaeological culture groups, our chronological and geographical borders, and by doing so provides a better understanding of what it is to be a human interacting with the landscape and building in stone.

In such a perspective humans are not reduced to being passive visitors, but rather are active individuals, acting on social logic, leaving traces in the landscape. We can touch upon the relationship between human(kind) and stone. The stones were not used

at random; they were chosen, handled, shaped and arranged following logic and principles (Axelsson & Jankav's forthcoming). The combination of being markers in the landscape and important ingredients in the building of the passage graves makes it probable that stones were not regarded just as pieces of rock; they were a part of everyday life and had a vital role in how the living handled and cared for their dead.

As the studies of the megaliths in Falbygden continue, it is likely that the results we have seen indicating that the monuments have individual and locally constituted features, as well as similarities on a regional and interregional level, will be even stronger.

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TOWARDS A BORDER - TRACES OF MEGALITHIC RITUAL IN THE NORWEGIAN FJORD COUNTRY

Einar Østmo

Abstract: The Funnel Beaker Culture (TRB) in Norway is known mostly from chance finds of its axes. However, in addition to some settlement sites, traces of ritual deposits are also known in the form of sacrificial deposits, flat graves and about three to five megalithic graves. All of these have been found in south-east Norway and more precisely in the Oslo Fjord region. They can be dated to Middle TRB, 3500-3100 calBC. Along with the contemporary TRB in Mälardalen, east central Sweden, the Norwegian TRB represents the northernmost presence of a more developed TRB Culture in Europe.

Keywords: Norway, Neolithic, Stone Age, Funnel Beaker culture, megalithic graves

The Funnel Beaker Culture in Norway

As both an erudite contributor to the ongoing debate about Neolithic agriculture (e.g. Fischer & Kristiansen 2002) and a frequent and welcome visitor to Norway, it seems appropriate at this juncture to invite Kristian Kristiansen (and his friends) for a brief visit to the Norwegian Neolithic.

While the concept of the Funnel Beaker Culture (abbr. TRB, from German *Trichterrandbecher*; a general reference is Midgley 1992) occupies a very prominent position in the received picture of the Neolithic of south Scandinavia and the northern part of the European continent in the fourth and early third millennia BC, its presence farther north is nowhere near as dominating. This concerns middle Sweden (Hallgren 2008), and certainly south Norway (Hinsch 1955; Prescott 1996; Østmo 2007). These regions may in fact be considered to form the northern border of the TRB in Europe. Neolithic communities in these northern parts arguably faced different natural and perhaps social challenges from those met with in Poland and Germany, and the TRB in Norway may have assumed a marginal character different from that found farther south, but perhaps also for this very reason may provide different insights into the history and nature of the TRB phenomenon.

The presence in Norway of archaeological finds indicative of early Neolithic agriculture, and in modern terms attributable to the Funnel Beaker culture in the Oslo Fjord region of south-east Norway, has been accepted by scholarship ever since the controversy between the geologist Andreas M. Hansen and the young A. W. Brøgger more than one hundred years ago. Hansen put weight on the almost complete absence in Norway of megalithic graves (Hansen 1904), while Brøgger maintained that the finds of point-buttressed, thin-buttressed and thick-buttressed flint axes (that are now considered TRB types) concentrated in farming districts to such a degree that they must have been left by an established farming population (Brøgger 1906, especially 139-144). Following the seminal work by Erik Hinsch (1955) the Norwegian TRB has been the subject of several more recent studies, offering updates based on new finds and developments in North European archaeology (Mikkelsen 1984; Østmo 1982, 1986, 1990, 1999, 2007; Glørstad 2005, 2010; Hallgren 2005, 2008:245-250; Østmo & Skogstrand 2006; Bergsvik & Østmo 2011; cf. also the summary by Boaz 1998:43ff). Hulthén and Welinder were able

to argue that the northern limit of the TRB in the Oslo fjord region as well as in Mälardalen, eastern middle Sweden, in the main followed the same course as that of brown-soil, broadleaf forest 4000-3000 BC (Hulthén & Welinder 1981:156-161, figs. 17.1-5.).

The flint and greenstone axes of TRB types and mostly recovered as stray finds from vaguely known contexts increasingly have been supplemented by finds of more distinct categories, recently including settlement sites, but also what may be interpreted as hoards and graves, including megalithic graves (Østmo 2007).

While recent surveys of archaeological finds preserved in museums in Stavanger, Bergen, Trondheim and Tromsø have revealed a number of items (mostly axes) of TRB types not previously described in archaeological literature (e.g. Østmo 1999; Bergsvik & Østmo forthcoming), it is still only in the south-eastern Oslo fjord region that we find examples of organised deposits in the form of hoards, votive offerings, flat graves and megalithic graves (Østmo 2007). In the main, these finds are datable to the middle of three TRB periods in Norway, approximately the years 3500-3100 calBC (calibration throughout according to OxCal 3.10, Bronk Ramsey 1995, 2001, Reimer et al. 2004) and contemporaneous with the 'period of belly lines' pottery decoration in Scania according to Lagergren-Olsson 2003, following upon the early TRB (the 'period of small imprints', 4000-3500 calBC in Scania) and preceding the late TRB (the 'period of tooth stamps' in Scania), approximately 3100-2800 calBC (Fig. 1). A similar tripartite chronology has been proposed by Karl-Göran Sjögren concerning the Middle Swedish TRB (in particular Västergötland, Sjögren 2003; for a more comprehensive discussion of the Norwegian chronology see Østmo 2007).

TRB graves and sacrificial deposits by the Oslo Fjord

The map (fig. 2) of certain and probable TRB graves and sacrificial deposits in Norway shows that it is precisely in the landscapes by the Oslo fjord that such finds have been identified. This northern group of finds and monuments may be viewed as the northernmost occurrence of the fully developed European TRB, compared with the wider occurrence of TRB finds on the north European plain from the Ukraine to the Low Countries and also with the south Scandinavian TRB of Denmark and south Sweden (Midgley 1992). One may, however, ask to what extent the characteristics of the TRB were preserved in this northern environment, or

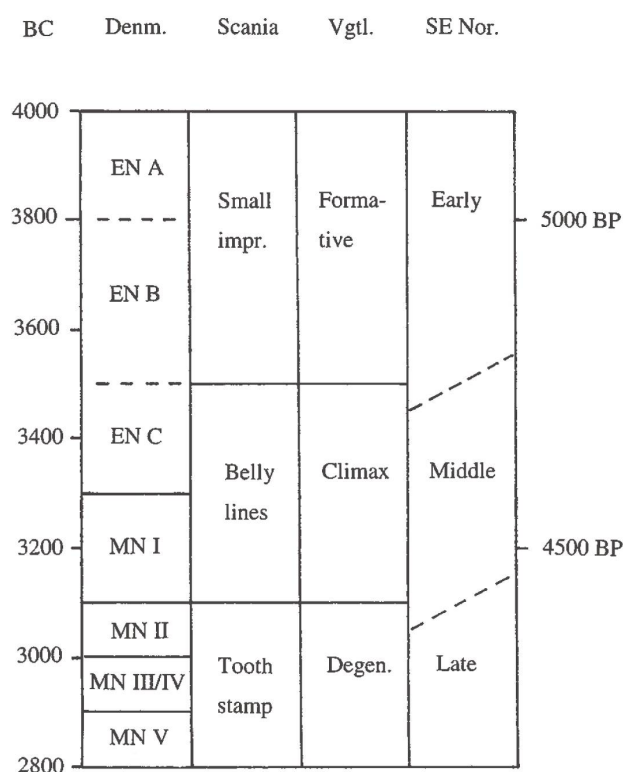


Fig. 1 Simplified diagram of the chronology of the Funnel Beaker Culture (TRB) in Denmark, Scania, Western Sweden (Vgtl.) and south-east Norway. Based on Andersen 1999; Jensen 2001; Lagergren-Olsson 2003; Sjögren 2003 and Østmo 2007. Abbreviations: EN=Early Neolithic, MN=Middle Neolithic

alternatively, to what extent the Norwegian TRB was affected by its extreme geographical position, perhaps by incorporating cultural traits derived from local traditions. My aim here is to provide some comments relating to this question.

All of the finds of TRB axes interpreted as sacrificial deposits indicated on the map have come to light as chance finds, and their interpretation is based on variously imperfect information about the find circumstances (Østmo 2007). The total comprises nine reasonably certain sacrificial deposits of collected finds, and sixteen single items which have been recovered from wetland surroundings such as usually are considered indicative of sacrificial deposits in south Scandinavia (Karsten 1994). It is striking that none of the finds is indicative of repeated deposition events, so it appears that permanent offering places such as those identified in south Scandinavia, were not established. Most of the finds are datable to middle TRB, the only exceptions being two single pieces from the early TRB and one from the late TRB (for details see Østmo 2007). Sacrifices of pots sometimes filled with organic matter, which are common in south Scandinavia (Koch 1998), are not known from Norway.

The flat or earthen TRB graves which may be identified with varying degrees of certainty in south-east Norway form a somewhat heterogeneous category, for all that they seem to correspond to the simple a) type among Klaus Ebbesen's eight types of 'simple Early-Neolithic graves' in Denmark (Ebbesen 1994). Seven reasonably likely such finds have been identified, in addition to sixteen cases of single finds of TRB axes from gravel pits etc. which may be considered to have come from simple

graves on account of the similarity of the find circumstances to those of the more securely identified graves (Østmo 2007). All come from the Oslo fjord region, broadly defined. Six may be dated to the middle TRB and one to the late TRB. Just like the finds interpreted as sacrificial deposits, the grave finds have all come to light under less than ideal circumstances, and none has actually been excavated archaeologically.

As in the case of the sacrificial deposits, the earthen graves in the Oslo fjord region appear to represent a simplified practice compared with that found in south Scandinavia. But with that in mind, it is also worth pointing out that for all their simplicity, they clearly belonged to the same cultural sphere as that of the south Scandinavian TRB, not least regarding the items found in them, which are all of characteristic TRB types.

In these circumstances, it is perhaps surprising that we should find any trace of megalithic rituals at all in these northern parts. However, five megalithic graves are arguably known or believed to have existed in south-east Norway (Østmo 2007 with refs.). One could perhaps say that this number reflects the marginal character of the Oslo fjord TRB, being of course low compared to the 7285 megalithic tombs identified in Denmark (Kaul 1991:229), or the c. 445 Swedish graves, for that matter (Bägerfeldt & Kihlstedt 1985:3); in both cases these are numbers which are considered to encompass only a fraction of such graves once built (Ebbesen 1985:37-42; Jensen 2001:347).

Megalithic graves in Norway

For a long time, only a solitary megalithic grave was believed to have existed in present-day Norway. It was discovered and identified as early as 1872 by that preeminent pioneer of Norwegian archaeology, Anders Lorange (Lorange 1876), while still standing as a ruin at the *Skjeltorp* farm in Skjeberg, Østfold. Neither Lorange nor Gabriel Gustafson, who undertook a small excavation of the grave in 1913 (Gustafson 1914), are known to have found any artefacts in it. The ruin existed until it was completely removed, probably in 1930. An excavation of the site was carried out in 1980-81 (Østmo 1982, 2007:124-129). It revealed that the grave monument had been circular with a diameter of approximately 8.6 m, stone-lined, and with an entrance in the shape of a stone-lined passage leading into the central chamber from east-southeast. Of the chamber itself only a number of flat, pebble-sized stones which may have belonged to the dry-walling of the chamber walls mentioned by Lorange were found. Just outside the entrance to the passage an oblong pit was excavated, and this contained stones, charcoal and fragments of pots. Other finds were made by screening the topsoil, including most of the flint artefacts. The potsherds clearly belong to several vessels (Fig. 3), among which at least one small funnel beaker with vertical striation of the body ('belly lines') can be identified, along with one pedestaled bowl decorated with lozenge patterns in the characteristic style of the early middle Neolithic (MN I, Müller's 'Grand Style' (Müller 1918:20-25), later more commonly known as 'Troldebjerg style' (Winther 1935; Jensen 2001:304 with refs.), and some potsherds which may have belonged to a similarly decorated clay ladle. All the pottery is of quite familiar TRB types datable to the early middle Neolithic (MN), or middle TRB in the terms employed here. More surprisingly, the 498 flint artefacts included two tanged points of types A 1 and A 2 (in accordance with the typology of Helskog, Indrelid & Mikkelsen 1976; cf. also Becker 1951; Malmer 1969). The presence of these points may be considered an expression of local cultural traditions as such points were in use at this early time in southern Norway although

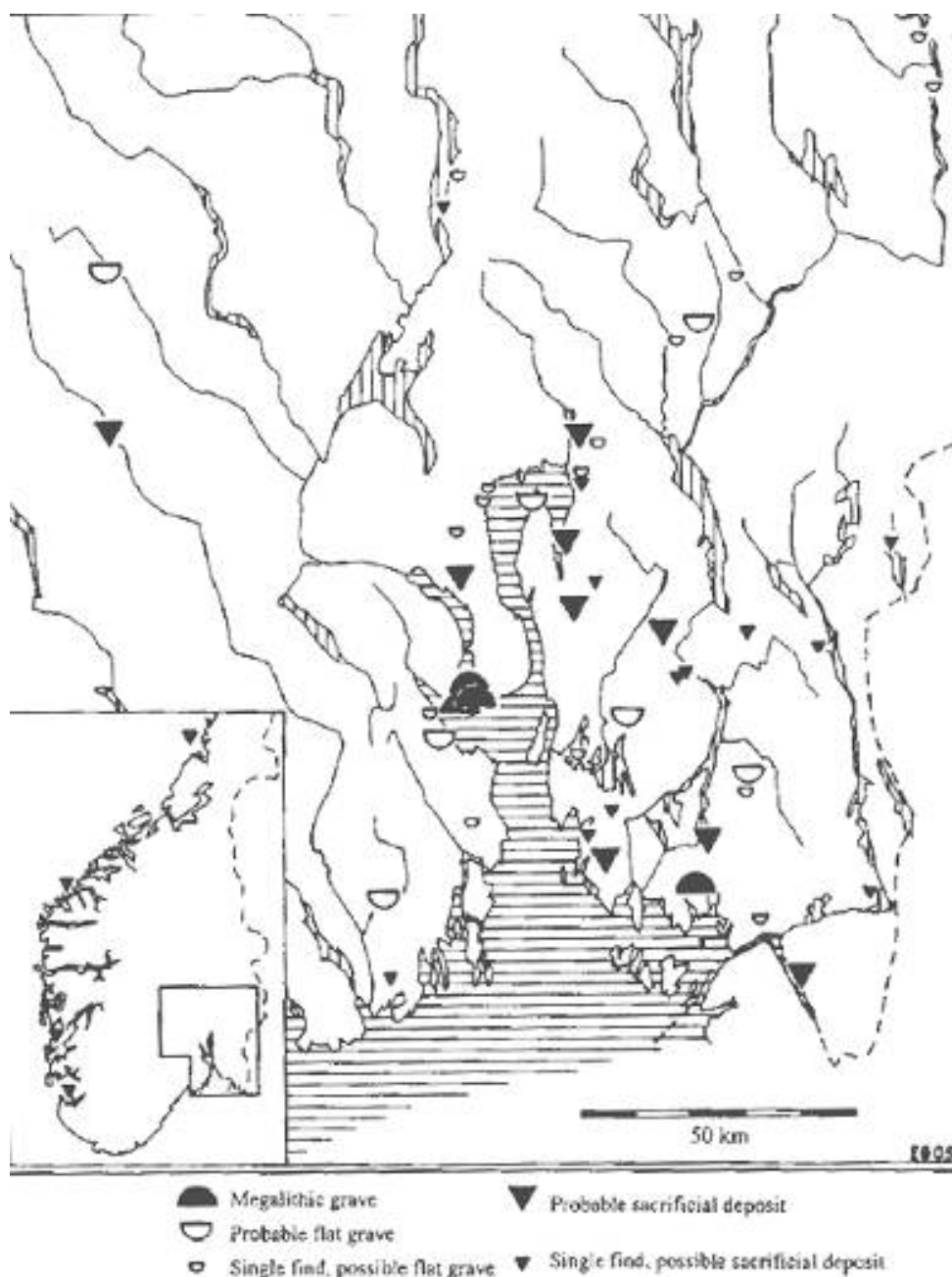


Fig. 2 Map of TRB sacrificial deposits, flat graves and megalithic graves in Norway (from Østmo 2007). Drawing by the author.

they had not yet been introduced in southern Scandinavia (cf. for instance Glørstad 1998).

The identification by Hinsch of the Skjeltorp grave as a polygonal dolmen with a short passage (Hinsch 1955:73) was certainly confirmed by the excavation. The grave in fact corresponds closely to Blomqvist's type Ds 3 (cf. Blomqvist 1989:194). All of this fits with a radiocarbon date of charcoal, found in the abovementioned pit outside the entrance, to 4560 ± 100 BP (T-4573) or 3500-3090 calBC. It is worth mentioning that the actual megaliths from Skjeltorp, having been dispersed among the neighbouring farms, were assembled in the 1940s and used to build a still standing, somewhat free reconstruction of the grave a short distance from the original site.

Whereas the Skjeltorp grave might reasonably be viewed as just the northernmost occurrence of the megalithic tradition represented in greater numbers in Bohuslän (Sjögren 2003), south

of the border between Norway and Sweden at Svinesund, the identification of megalithic graves at Holtenes (Hurum, Buskerud county) is clearly another matter.

Holtenes lies at the southern tip of the Hurum peninsula between the Drammen fjord to the west and the Oslo fjord to the east, about 53 km to the north-west from Skjeltorp as the crow flies. A couple of stone cists were known from early descriptions to have existed there, and on somewhat uncertain grounds supposed to be of late Neolithic date (Brøgger 1938: Note 3; Gjessing 1945:428; Munch 1963:65-66). More recent investigations have, however, established the more or less probable presence of four megalithic monuments, Holtenes I-IV from north to south, within a space of less than 1 km (Østmo 1985:70, 1986, 2002, 2007:127-132).

Holtenes I was excavated in 1978 (Lindblom 1980). It has an approximately square chamber built of four slabs, with sides of c. 1.7 m, rising 0.8 m above the ground. There are faint traces of

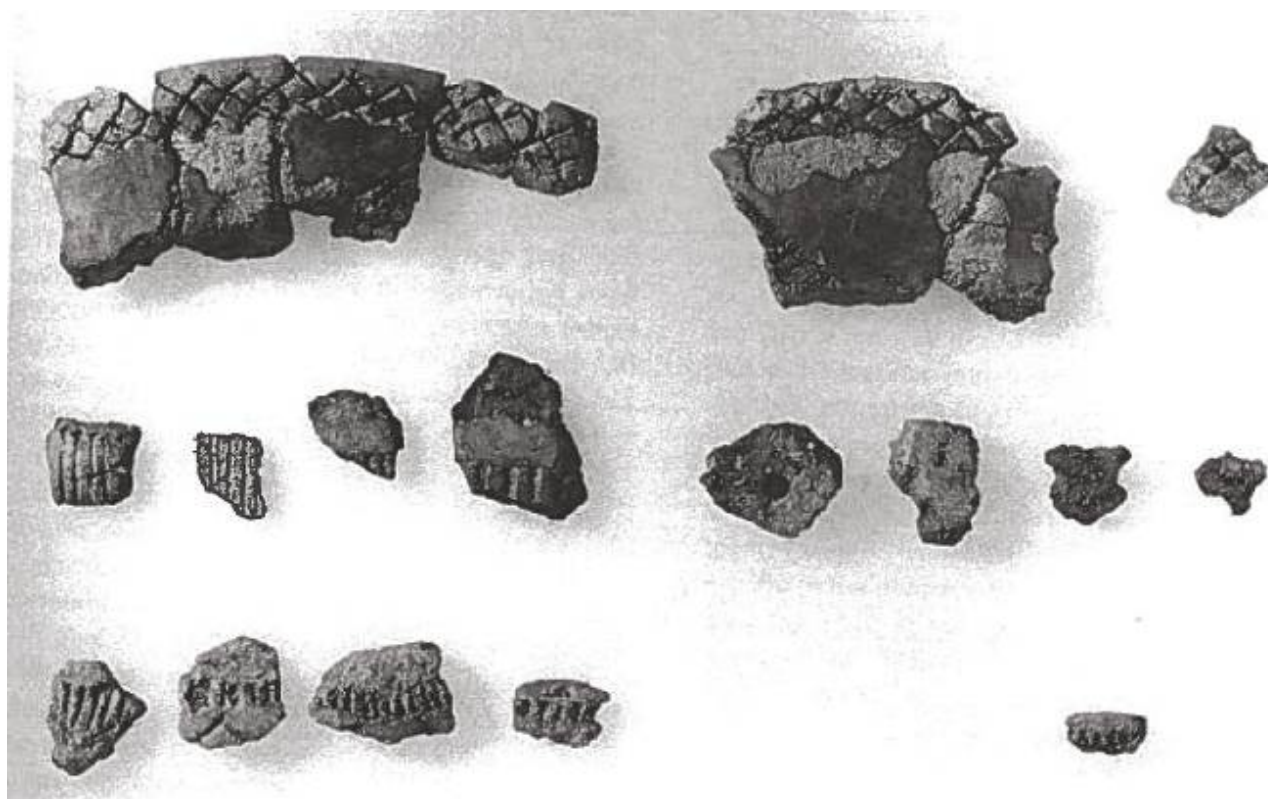


Fig. 3 Skjeltorp, Østfold, Norway. TRB pottery from the site of the dolmen. A: Pedestaled bowl, B-C: Funnel beakers, D: Clay ladle, E-G: Other vessels. Photo: Marianne Vollen.

a low mound which once surrounded the chamber, but no sign of a passage. These features make interpreting Holtenes I as a dolmen, perhaps the early type Ds 2 (Blomqvist 1989), seem most appropriate (Østmo 1985, 2007:127). However, only the excavation of the Holtenes III grave in 1984 paved the way for this interpretation; a similar claim probably would have met with many a raised eyebrow in 1978. *Holtenes II* is no more than a hypothesis based on the local tradition that another grave chamber similar to Holtenes I once stood immediately south of the latter and was removed before 1911 (Østmo 2007:128). Nothing more can be said about it, of course.

Holtenes III. About 450 m to the southeast from Holtenes I, and at c. 33 m above the sea at almost exactly the same level which constituted the seashore in middle TRB times, another small mound, about 8 m across and 0.5 m high, was brought to the archaeologists' attention only in the 1970s. A quite substantial stone slab can still be seen rising c. 0.8 m above the mound just beside a crater in the mound. An excavation was carried out in 1984 (Østmo 1985). It revealed that the standing slab had formed the south-western wall of a polygonal stone chamber, probably with four more walls and a diameter of approximately 2.5 m. An entrance could not be identified. The chamber floor still had some of its original paving of stone tiles and otherwise consisted of fine, yellow sand (*ibid.*).

Artefact finds from the floor (Fig. 4) included two tanged points of flint of the types A 1 and A 3 as well as the tip of a schist point of north Scandinavian type. But we also found several fragments of amber ornaments, such as had never previously been found north of southern Scandinavia. These pieces belonged to an amber necklace of the type DO 128, familiar from TRB contexts

in Denmark and also from the European continent (cf. Neergaard 1888; Nordman 1917:255-260; Thorvildsen 1941:54; Glob 1952:23-24; du Gardin 2003). The other finds mentioned are of local types. At the early date of this burial and just as at Skjeltorp, this concerns even the tanged points, but also the schist point, as both of these types became more widespread later in the middle Neolithic (Bakka 1976; Nærøy 1993; cf. also Østmo 1980). The date of the grave is supported by a small amount of charcoal which was found in the chamber floor and dated to 4660 ±80 BP 1280 BP (TUa-5828); that is, 3630-3350 calBC with a single standard deviation, virtually the same age as that obtained at Skjeltorp as related earlier. In conclusion, Holtenes III clearly was a megalithic grave, certainly a polygonal dolmen (Østmo 1985, 2007:128, cf. also Blomqvist 1989:194).

Holtenes IV. The only trace preserved of this grave is a scrap of paper filed in the archives of the University Museum of Cultural History in Oslo. It records the information received in 1908 on the acquisition of a flint axe said to have been found in a grave chamber at Rødtangen, Holtenes. The grave was described as 'a stone cist consisting of 4 slabs which rose c. one half metre above the ground, but went far down into it. The finder said that the axe lay c. 1½-2 ft underneath some smaller tiles, which he considered to be floor tiles'. From a simple design at the edge of the paper it seems that the cist measured c. 1.5 m by 1 m. However, the measurements given are described as 'possibly too small'. Having been recorded in 1908, this grave was known for a long time and, with Holtenes I, is one of two stone graves at Holtenes sometimes mentioned briefly in early archaeological literature (e.g. Gjessing 1945:428). The date of it would seem to rest on the correct identification and date of the axe, the description of the grave itself being too brief to allow any conclusion. The

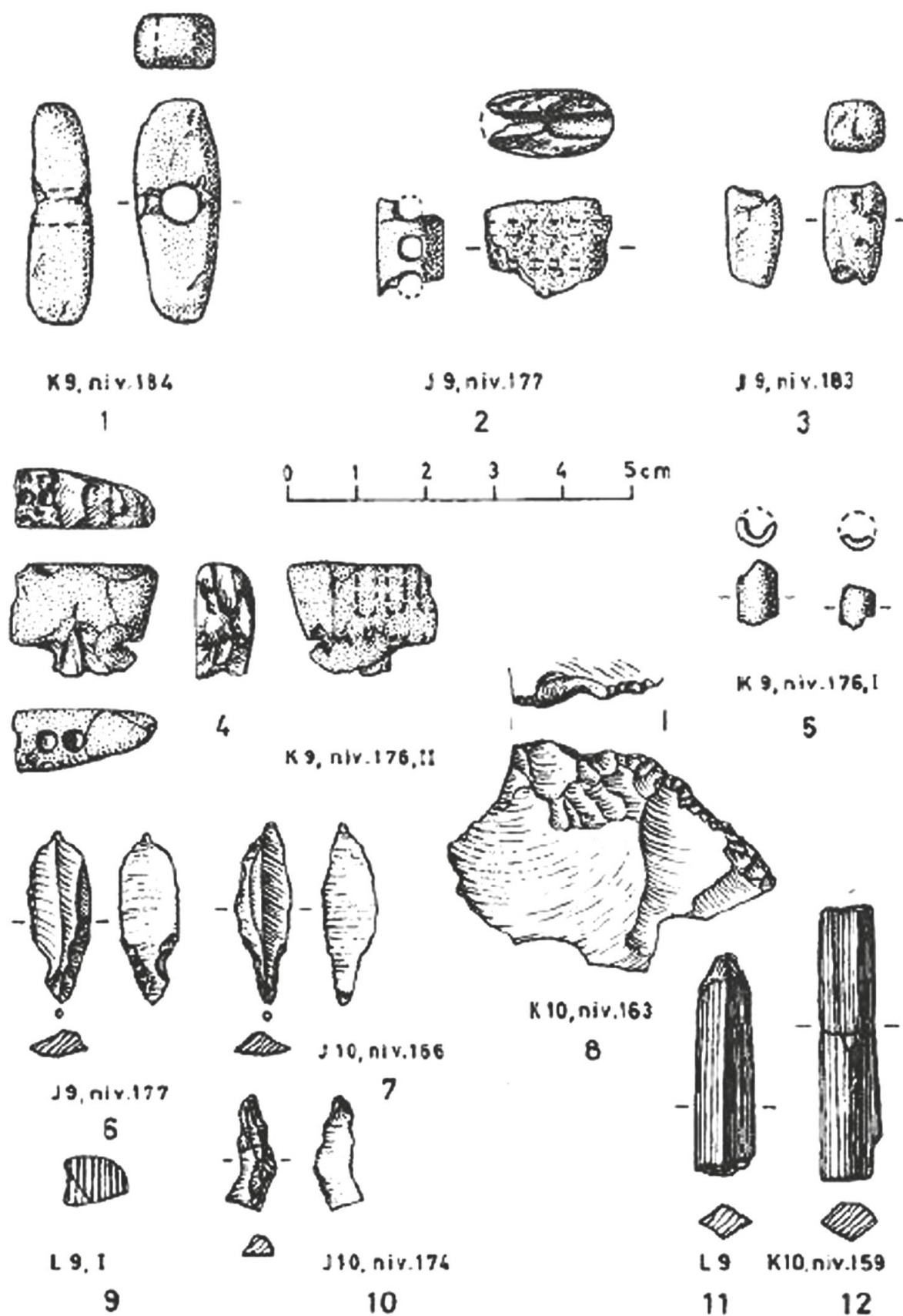


Fig. 4 Holtenes III, Buskerud, Norway. Artefacts from the dolmen. 1-5: Amber ornaments, 6-7: Tanged flint points, 8: Retouched flake, 9: Chip of ground flint axe, 10: Fragment of bit, 11-12: Fragments of schist points. Drawings by Tone Strenger.

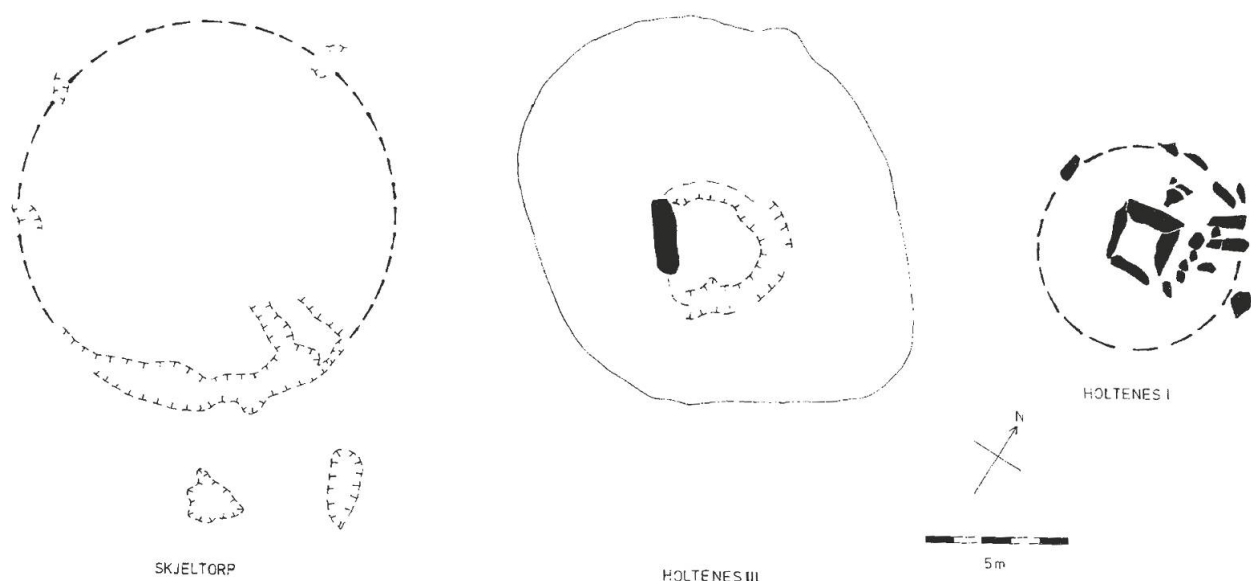


Fig. 5 Simplified plans of the better preserved Norwegian megalithic graves. Drawing by the author.

axe in fact corresponds closely with Nielsen's type b1 among thin-bladed, thin-butted flint axes, i.e. the four-sided variety with polished edges with a sharp butt (Nielsen 1977:113). As Nielsen argues quite convincingly, the date of such axes in no way differs from that of other thin-butted axes, which for those with polished edges covers the entire time span from early Neolithic B to middle Neolithic I. This means that the axe, and therefore also the grave chamber, belong to the TRB, and consequently that the chamber must have been part of a megalithic grave, certainly a dolmen. Should one venture a guess at a more precise classification, the information available is compatible with the Ds 1 characteristics as defined by Blomqvist (Blomqvist 1989:52; Østmo 2007:129).

Summary: The Holtenes group

The presence of several megalithic graves in a small space such as at Holtenes has no parallel on this northern latitude, at least not in modern Scandinavia (but perhaps in Shetland, certainly another matter). Therefore, for a time around the mid-fourth millennium BC, Holtenes was a focal point in what we might call the TRB landscape. This was where the ancestry cult and whatever other functions that were connected with megalithic monuments were practiced. The situation of the Holtenes tombs right by the inlet to the Drammen fjord certainly is not accidental. In nearby Sande, just across the fjord to the south of Holtenes, there is one of the most conspicuous of all concentrations of TRB flint axe finds known in the Oslo fjord region. This serves as a reminder of the significance of the sea for communication during the Neolithic. Indeed, from this perspective Holtenes easily emerges as particularly well-chosen, being at the same time easy to reach and difficult to avoid, an ancient and important sea route to the fertile regions around Drammen and beyond passing by at no more than a couple of cable lengths. Prior to the development of modern communication means, this route was in fact one of the most important connections between the fertile regions of south-eastern Norway and the western fjord country (Steen 1942:265).

Conclusions: The northern boundary of the megalithic tradition

All the three megalithic graves that have been investigated archaeologically in south-eastern Norway - Skjeltorp and Holtenes I and III - have been set in round, low mounds with diameters of about 6 m to 8.6 m. The chambers have been built of large, natural stones or slabs, to form square or polygonal rooms with four or five walls and roofs which in each case appear to have consisted of one large piece. Only at Skjeltorp has the presence of a passage been established with certainty (Fig. 5).

Uncertainties notwithstanding, these descriptions fit the Ds 2 and Ds 3 types of megalithic graves most common in west Sweden as described by Blomqvist (1989). The pottery from Skjeltorp, the amber ornaments from Holtenes III and the flint axe from Holtenes IV confirm that these monuments were built within the middle TRB at the transition from the early to the middle Neolithic. This is supported by the radiocarbon dates from Skjeltorp and Holtenes III to the middle of the fourth millennium BC or the time around 3400-3500 calBC. The megalithic graves were therefore built during the second and most significant of the three TRB phases outlined initially. This certainly was no accident, as the middle TRB was when this culture was most widely distributed, stray finds of TRB axes having been recovered as far north as at the Arctic Circle (Østmo 1999).

The presence at Holtenes of a number of megalithic graves representing two, or possibly all three, of Blomqvist's types probably means that the megalithic tradition existed for some time there. Hypothetically, its duration could have equalled that of the Scandinavian megalithic tradition as such, at most the time span 3600-3200 calBC. It is difficult to be more precise than this, except to note that the radiocarbon date from Holtenes III does fall within this period. There are, however, few definite signs of prolonged or repeated use of any of the tombs; the artefact finds rather leaving the impression of singular events. Perhaps this

means that it was the actual building and initial use of the graves that was of particular significance to the local TRB community; building a monument was perhaps more important than having one (this notion is developed in detail by Tilley 1996:157-162). However, the presence in two of the graves (Skjeltorp and Holtenes III) of tanged A points if found in south Scandinavia certainly would have been considered to prove later use of the chambers by the Pitted-Ware culture. As noted previously, this does not apply in equal measure to Norway, as tanged points had been in use since the beginning of the Neolithic or even the late Mesolithic (Glørstad 1998 with refs.). Rather, these points demonstrate that by the time the megalithic graves were built, the TRB in this region was following local custom regarding point technology. The schist point fragments from Holtenes III may be another indication of this local connection. It is worth noting that none of the graves has been found to have been used during the later, corded-ware or late Neolithic phases, as so often has turned out to be the case in south Scandinavia.

This impression of an unstable or short-lived tradition of applying TRB ritual standards in the Oslo fjord region is a confirmation of what was found concerning sacrificial deposits and flat graves, none of which can be taken to support a notion of permanent ritual places. Typologically, too, the TRB in this region, as should be clear from the above, leaves a more restricted impression than in south Scandinavia concerning all three categories of finds and observations.

This perhaps is just what one should expect at the very edge of a widespread tradition such as that of the TRB and its megalithic tombs and other signs of elaborate rituals. The TRB spread quickly across the Continent and southern Scandinavia, but only briefly touched middle Scandinavia, in fact only at Holtenes establishing a cult of some duration. It says something for the effectiveness of communications at the time that the TRB, and in particular the megalithic tradition, could become so widespread at all (Sherratt 1990). But being obviously extremely demanding of material, social and spiritual resources, it could not be expected to last, and various local developments would inevitably take over. All along its northern border, the TRB seems to have been transformed into other cultural manifestations in which farming played little or no part, but with a strongly increased emphasis on coastal hunting and fishing, and with different aesthetic and ideological priorities from the TRB (cf. Browall 1991; Østmo 2008, 2010). The flint and schist points recovered from the Norwegian megalithic graves may actually indicate that the process was already underway when the graves were still in use. When the TRB gave way after the megalithic episode, it was to a transformation of the local culture, or rather a merger of the two strains into something new and largely independent.

It could be argued that the TRB in the Oslo fjord region maintained the basic typological and formal characteristics that define the culture also in south Scandinavia, a view which if anything is strengthened by more recent settlement site finds. Even so, a certain 'borderline' character is discernible in the form of a more restricted repertoire of material expression, and in the adoption of certain local customs such as regarding point technology. The TRB not unexpectedly assumed a somewhat different character in these northern latitudes than in its core areas on the north European plain in Poland, north Germany, Denmark and Scania.

The scope for assuming a 'pure' agricultural TRB in Norway sometimes has been small, and has certainly affected the thinking of those scholars inclined to view the TRB as an exception to

'normal' conditions in the Norwegian Neolithic (e.g. Prescott 1996). And the reality remains that the TRB in Norway, even if undoubtedly present at least by the Oslo fjord in many significant aspects (Østmo & Skogstrand 2006), in most of the country would have been closely surrounded by, and possibly challenged by, natural conditions inviting forms of subsistence other than those adopted by the south Scandinavian TRB (cf. Østmo 1999; Bergsvik and Østmo 2011). The hunters and fishermen inhabiting the shores, fjords and valleys of south Norway when the TRB to some degree became established there may have continued to represent more of a presence, and perhaps more of a challenge than the case may have been in Kujawia and Denmark, and the adoption of some TRB cultural elements as far north as Trøndelag and Nordland may have been more connected with traditional forms of life than similar developments farther south.

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EXPANSION AND SOCIAL CHANGE AT THE TIME OF VARNA

John Chapman

Abstract: The recent availability of long runs of 14-C dates, often AMS, from fifth millennium BC sites in central, south-eastern and eastern Europe means that it has now become possible to make century-by-century comparisons of the distribution of social networks as defined by ceramic style zones. One of the most important of such sites in prehistoric Europe is the Varna cemetery and the dating comparison reveals a number of significant social and cultural changes coeval with the time of Varna. In this chapter, I examine the question of whether changes coeval with the 'Varna effect' are coincidental or whether the changes documented in the Varna cemetery are systematically, or even causally, related to wider changes in the scope and nature of social networks. I seek an explanation for two major settlement changes each contemporary with the time of Varna – the linkage of the Karanovo VI – Gumelnița – Kodzadermen network and the expansion of the Cucuteni-Tripolye – steppe network as far east as the Middle Volga steppe.

Keywords: Varna cemetery, Black Sea, prehistory, social networks, network linkage, fifth millennium BC, Karanovo VI, Cucuteni, Tripolye, steppe, prestige goods exchange

Introduction

One of the most striking aspects of an unusually striking prehistoric site – the Varna cemetery – is the representation among the grave goods of exchange networks of extreme size and complexity. But what were the possible effects of the Varna cemetery on those communities and individuals comprising those networks? It has only been possible to investigate this question very recently, thanks to the newly available AMS dates for the Varna cemetery. The Varna cemetery is one of the most spectacular cemeteries in European prehistory (Ivanov 1988), with the world's earliest concentration of gold ornaments and a wide range of other exotic grave goods linking the western Pontic zone to the Alpine zone, the Aegean, much of the East Balkans and parts of the Central Balkans (Chapman 2013). There is a massive range of quantity of grave goods found in the over 300 graves, from no grave goods at all to concentrations interpreted as signifying the 'superordinate dimension' defining a ranked society (Renfrew 1978).

The publication of the first 14 AMS dates for the Varna I cemetery demonstrated the probability that the burials started earlier than had previously been thought and continued for a shorter time than previously assumed (Higham et al. 2007; Chapman et al. 2007a). Bayesian modeling showed the overall span of the cemetery to be 75 – 155 years long, with the highest probability of 110 years. The highest probability of the start date was 4550 BC (4605 – 4550 BC at 68.2% probability), with that of the end date at 4450 BC (4480 – 4425 BC at 68.2% probability). The AMS dating of a further 50 samples shows little difference from these estimates (Higham et al. in prep.).

This chapter considers the important phenomenon of network linkage (Sherratt 1972) and expansion, contrasting forms of which are attested at the time of Varna. Sherratt (1972) used the coalescing of several disparate Late Neolithic ceramic traditions – Boian, Vădastră and Maritsa – into a single closely-related network – the Karanovo VI – Gumelnița – Kodzadermen (henceforth 'KGK') network in the Late Copper Age of Bulgaria / initial Copper Age of southern Romania (Fig. 1). He interpreted this fusion as a peaceful convergence of two or more already related groups rather than any form of invasion (Sherratt 1972: 529). Such ceramic convergence, with its attendant enhanced inter-community contacts, is also supported by a range of non-ceramic

parallels in each area. There is also no necessarily large movement of people in such inter-regional linkages, although small-scale movements of people cannot be disregarded (Montgomery et al. 2000).

The parallel case under consideration concerns the expansion of the Cucuteni-Tripolye network far to the north-east of its original distribution. The Cucuteni-Tripolye expansion involves major subsistence change – the introduction of mixed farming from an earlier core zone where agro-pastoral lifeways were already well-established into zones peopled by hunter-gatherer-fishers who used few, if any, agro-pastoral resources. This occurred in two stages: first, the expansion of the distribution of late Pre-Cucuteni / Tripolye A pottery, with associated agro-pastoralist developments, to just short of the Dnieper valley; and, secondly, further network expansion of the Cucuteni A – Tripolye B1 settlement distribution, which increased interactions with steppe communities from the Dnieper valley east to the Middle Volga basin.

In this short paper, which I am delighted to dedicate to my long-term friend and colleague, Kristian Kristiansen, I pose one question: was Varna sufficiently important to make a *difference* to other communities linked to its extraordinarily extended network, perhaps even those living 1,000 km or more away? In other words, was there such a phenomenon as the 'Varna effect'?

The 'Varna effect': exchange networks with north-east Bulgaria

One way to characterize the social context of the Varna cemetery is to summarize the extensive network through which Varna was connected to many local and remote places and people (Table 1); we may infer a dense exchange network connecting many parts of the Balkans to the Varna inlet, whether by sea or by land.

These links demonstrated by the materials deposited in the Varna cemetery are complemented by three other cases of long-distance exchange. First, the pumice-stone deposited in the Omurtag hoard - typologically dated to the Late Copper Age - is, with high probability, derived from Lipari, southern Italy (Gaydarska et al. 2004). Secondly, the imitation of a standard form of Balkan Chalcolithic gold pendant with one large central perforation and two smaller suspension holes (e.g. Hotnica: Angelov 1959; Varna Grave 2: Ivanov & Avramova 2000) in red sandstone was deposited

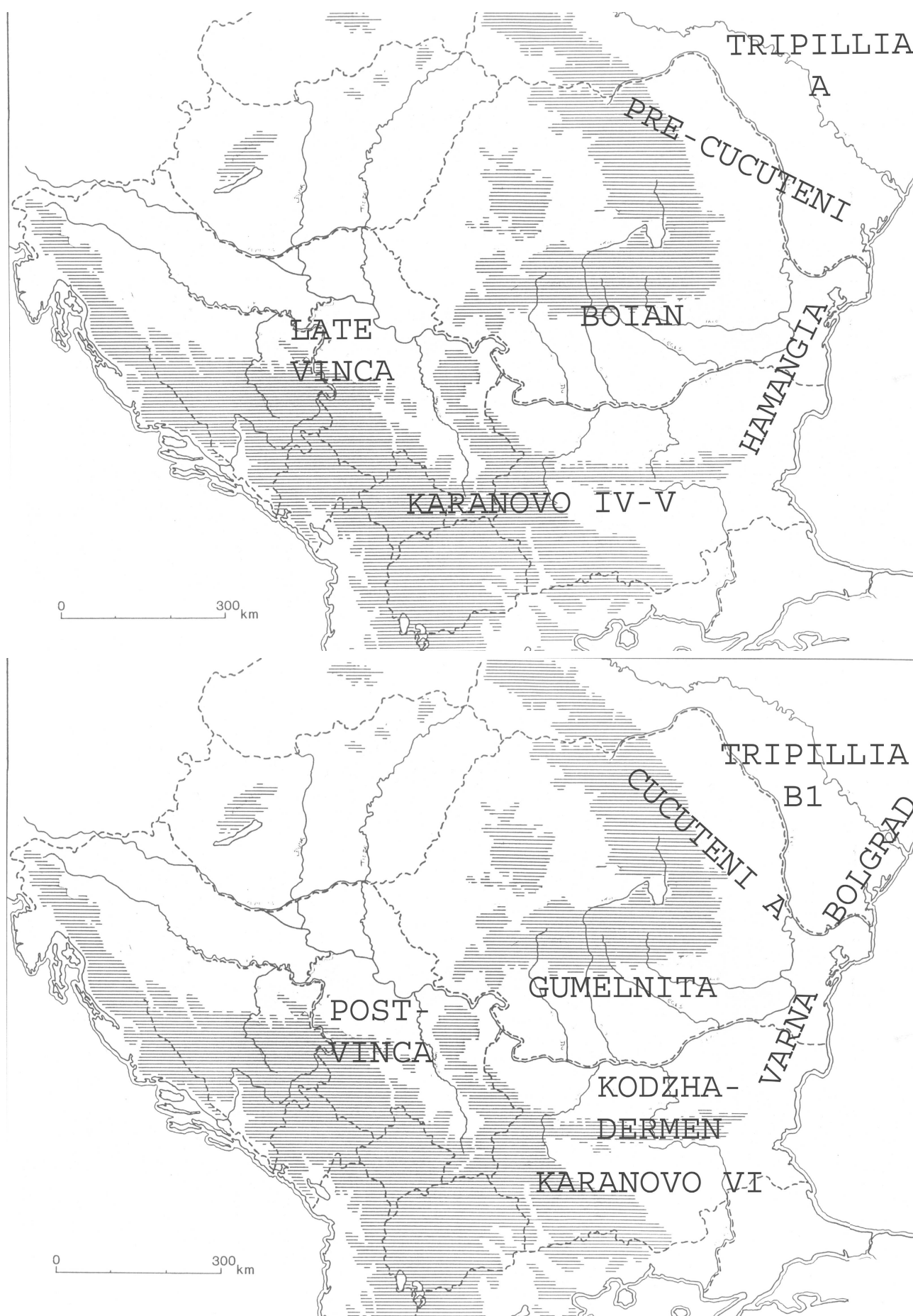


Fig. 1 Distribution of principal social groups mentioned in text: (A) 5000 – 4700 BC; (B) 4700 – 4200 BC.

Table 1 The materialization of the Varna exchange network

RAW MATERIAL	SPATIAL LINKS	REFERENCE
Gold	? Burgas region and other sources	p.c., E. Pernicka
Copper (incoming)	Minimum of 8 sources (Burgas, Central Rhodopes, Central Serbia, etc.) with 11 additional unidentified LIA signatures	Gale et al. 2000; Chapman 2008: Fig. 7.3
Copper (eastern network)	As far east as Chvalynsk cemetery, Volga Basin	Anthony 2007; Kotova 2008; Ryndyna 1998
Dentalium	Aegean	Chapman et al. 2007
Spondylus	Aegean	Chapman et al. 2007
Carnelian	no Balkan source yet known	Kostov 2007
Nephrite	no Balkan source yet known	Kostov 2007
Jadeite	Monte Viso, south-east Alps	Pétrequin et al. 2007: 170: 2012
Marble	beaker in Grave 41 from Kulaksizlar workshop	Takaoğlu 2005: 17 & 37
Graphite	Closest source is Gramatikovo, south of Burgas	Leshtakov 2004



Fig. 2 The 'Varna network' at its full extent: 1 – Varna; 2 – Khvalynsk cemeteries; 3 – Nikolskoe; 4 – Dniestr Rapids sites; 5 – Sredni Stog; 6 – Krivoy Rog; 7 – Sakarovka; 8 – Rușeștii Noi; 9 – Karbuna; 10 – Giurgiulești; 11 – Poduri; 12 – Pietrele; 13 – 15: Omurtag, Ovcharovo & Targovishte; 16 – Burgas; 17 – Ai Bunar; 18 – Polgár-Csőszhalom; 19 – Lipari; 20 – jadeite sources, south-west Alps; 21 – 22: Kerhuen 2 & Renozar.

in the passage grave of Renozar, near Plovan (Finistère, Brittany) in the early fifth millennium BC (Cassen 2003). Thirdly, there is a link between the deposition of sherds of Stichbandkeramik sherds on the tell at Polgár-Csőszhalom (Raczky et al. 2007: 58 & Fig. 5.2) and the export to Brittany of a complete Early Stichbandkeramik vessel, to be deposited in the central cist of the passage grave of Kerhuen 2, Belz, also in the first few centuries of the fifth millennium BC (Cassen 2003). Taking the Chvalynsk copper exchange into account, these exchange links to both west and east indicate a total Varna exchange system in the mid-fifth

millennium of cca. 3,000 kms, reaching from the Atlantic Coast almost to the Caspian Sea (Fig. 2).

In this chapter, we shall investigate the impact of the 'Varna effect' in terms of four potential changes: increased sedentarisation, agropastoral intensification, diversification of mortuary practices and a wider range and diversity of objects, related to an aesthetic of colour, brilliance and exoticity. While the first two factors measure the extent to which settlement and subsistence changes capable of increasing local production were related to the demand for

exotic imports, the third and fourth factors are direct indicators of the impact of the Varna effect on surrounding communities. The argument here is that the impact of the Varna objects themselves, with all the social and aesthetic implications brought by incorporation in a long-distance exchange network, would lead to local cultural change, whether in the means of producing exchangeable surplus for exotica or in the social structures of communities which domesticated the exotic objects. The local context of exchangeable items was, of course, fundamental (Chapman 2002); there was a strong contrast in the development of domestic and mortuary arenas of social power in the East Balkans, the North Pontic forest-steppe and steppe zones.

Network linkage in the Kodzadermen – Gumelnița -Karanovo VI (KGK-VI) network

This network linkage brought closer communities using Boian, Vădastră and Maritsa styles of pottery which had already, for decades or centuries, been practising mixed farming in small villages (Bailey et al. 2002). The network also extended into the steppe zone east of the Danube Delta – the so-called Bolgrad-Aldeni variant (Dolukhanov 2002). There was considerable settlement diversity in these pre- KGK-VI villages. The same diversity is true of mortuary practices in the pre- KGK-VI groups, with occasional cemeteries in Boian (Vărăști) but none yet known in the Vădastră and Karanovo V groups, in strong contrast to the well-established cemeteries of the West Pontic Hamangia group (Todorova 2002). Despite similar crop spectra in the pre- KGK-VI network, the use of the plough seems variable, with no evidence yet in the Karanovo V or Boian groups but good evidence in the Vădastră group (Mateescu 1975). Recent archaeo-zoological analyses show the extent of convergent herding practices between Boian and Hamangia communities, with high reliances on domestic caprines and cattle (Bréhard & Bălășescu, submitted). There are already close material culture parallels in the early sixth millennium BC – especially between Boian and Maritsa styles. The picture of regional variation with some convergence of daily practices shows there is already some degree of network linkage between pre- KGK-VI communities. In what ways, and why, have KGK-VI networks changed from those of their predecessor communities?

There are two ways in which convergent practices can be documented in all regions, while there is partial convergence at the regional level in two other practices. The first and most obvious development is increased sedentarisation, marked by the much wider distribution of tells (Fig. 3). Tells not only continued to be the fundamental settlement form in southern Bulgaria but also spread into areas north of the Stara Planina, where hitherto there were few tells. Although there is still a bias against the location of flat sites in most of the East Balkans (but NB the Teleorman survey: Bailey et al. 2002), tell settlement not only becomes more frequent in terms of the number of tells vs. flat sites but also betokens longer occupation and/or more intensive deposition of burnt buildings material, as shown by increased thickness of tell stratigraphies (Todorova 1978: Tables 4 - 5). Since the increased use of remote sensing in the Balkans has confirmed the frequency of the juxtaposition of a tell with extensive flat sites (e.g. Podgoritsa, Uivar and Pietrele), it has become harder to assess the population size of the basic KGK-VI settlement module: tells are rarely larger than 2ha in basal diameter, with a modular population of 120 – 150 people (Chapman 1989), but the inclusion of coeval flat site populations could change this figure dramatically. The Bolgrad-Aldeni group is the only variant lacking in tell settlements.



Fig. 3 Photo of tell Tangâru, south-east Romania. Photo: Svend Hansen.

The second key marker of network linkage in all regions is material culture. At a very general level, many of the vessel shapes are found in most regions of the KGK-VI network but there are variations in the frequency of individual vessel types between regions. However, only one half of the pottery shapes known in the Bolgrad-Aldeni groups have parallels in Gumelnița (Subbotin 1982). The same principle holds for widespread fine ware decorative styles but with regional preferences for individual styles, such as graphite-painted wares. By contrast, coarse ware styles are ubiquitous in the KGK-VI network.

There are also many non-ceramic items which materialize shared social practices across the KGK-VI network. These items range from figurines in fired clay, bone and metal; personal ornaments of gold, copper, *Spondylus* shell, bone, antler and fired clay; the use of lithic macroblades often of Ludogorje flint (Gurova 2010). It was to summarize the great variety of objects across the KGK-VI network that Nandris (1978) coined the biosocial term 'Climax Chalcolithic' societies. But he was also referring to the vastly increased *quantity* of objects in this period and network, as betokened in the range of objects deposited on settlements as much as the increased practice of 'set formation' in this time (Chapman 2000). While the variations in object distribution within each region of the KGK-VI network are arguably as significant as their shared usages across the whole network, the tendency for a far higher proportion of object types to be distributed across the entire network than in pre- KGK-VI times is a strong argument for a denser network with greater connectivity.

The two practices which do not show network convergence so clearly concern subsistence intensification and mortuary diversification. Despite the documented bovine traction of the Vădastră period and the discovery of an antler ard at Căscioarele (Dumitrescu V. & Bănățeanu 1965), a study of Gumelnița A2 and B1 cattle phalanges showed little evidence for intensive cattle traction (Bălășescu et al. 2005). This finding contrasts with the implications of bovine pathologies and age profiles from Ovcharovo and other KGK-VI sites (Mateescu 1975; Vasilev 1983, 1985), both of which suggest cattle traction, whether for carts or for ploughing.

This pattern of regional variation within the KGK-VI network is reinforced by studies of faunal spectra. The Gumelnița faunal assemblages were much more variable than in the pre- KGK-VI

period, with domestic cattle dominant at some sites, domestic caprines at others, aurochs at yet other sites and red deer at still others (Bréhard & Bălăşescu submitted). The importance of wild animal bones as a marker of feasting at ritual sites is particularly clear at Căscioarele, where over 60% of the animal bones by number derived from red deer (Bolomey 1965). In contrast, Nandris (1978) identified a modular pattern of minimal hunting alongside a balanced exploitation of domestic cattle, caprines and pigs at Karanovo VI sites. This finding is broadly confirmed by Vasilev's (1983, 1985) studies of the large faunal assemblage from the Ovcharovo Chalcolithic tell in north-east Bulgaria. Once again, Bolgrad-Aldeni groups differed from other regional groups in the minimal significance of hunting and the possible domestication of the horse (Tsalkin 1970).

In the KGK-VI period, there is an extension of cemetery-based mortuary practices to more areas than earlier. Thus, there are newly founded small tell-related cemeteries in north-east Bulgaria (e.g. Targovishte), while Muntenian cemeteries continued the tradition begun in the Neolithic (e.g. Vărăşti, Pietrele) (Chapman 2012). However, cemeteries have yet to be discovered in those regions – Oltenia, the Danube – Prut steppe and southern Bulgaria – where no pre-KGK-VI cemeteries are currently known. The chronological continuity of social practice despite horizontal densification of links across the KGK-VI network is striking. How are these changes and continuities related to each other and to the 'Varna effect'?

During the two centuries of the Varna cemetery, there was at the same time an extension and a densification of tell-dwelling in the East Balkans. On the one hand, the tells embodied a strengthened domestic and ancestral domain quite at odds with the importance of the Varna mortuary domain (Chapman 1991); on the other, if the effect of Varna was to increase the significance of the display and deposition of exotic materials, as well as special finds, and the acquisition of these objects required agricultural intensification for surplus production, then tell-dwelling and arable intensification could have been related to the quest for long-distance exotica and the production of ever-increasing quantities of objects. Insofar as the aesthetic principles of colour, brilliance and exoticity central to mortuary practices at Varna had any wider relevance, their diffusion was part of the 'Varna effect' – viz. the heightened importance in cultural symbolism of these three principles which were already widely established in the Balkan Neolithic. One field where the limits to the impact of the Varna effect can be identified in terms of the uneven development of cemeteries themselves is among communities within the KGK-VI network.

It is an interesting point that, whatever the 'Varna effect' on the KGK-VI network, there was no extension of the zone in which the distinctive Varna group pottery was produced. There can be little doubt that the materials and objects that criss-crossed the KGK-VI network on their way to ultimate deposition in the Varna cemetery produced an increased densification of links between communities and regions in this period. This additional 'Varna effect' was equally well documented for the raw graphite sticks required to paint decorative motifs on dishes and amphorae (Leshtakov 2004) as it was for the gold moving to Varna but also, in much-reduced quantities, to the Vărăşti cemetery (Chapman, in press a) or the pumice-stone moved from the Central Mediterranean to Omurtag. This material culture tied communities together through artefact biographies into a web of narratives which defined, promoted and materialized social and political relations (Bender 1993). But, running in parallel to the 'Varna effect', were all of those quotidian practices in which people learnt how to use themselves by using

the same or similar material forms in appropriate ways (Keightley 1987; Chapman & Gaydarska 2006). The wider the distribution of shared objects, and the more common in myriad household contexts, the more likely that people living in widespread parts of the the KGK-VI network would develop comparable performances to display and utilize their material culture.

Thus, in summary, three aspects of social practices can be identified in the network linkage which constituted the the KGK-VI network: the pre-existing links in the pre-KGK-VI network, the 'Varna effect' on the cultural significance of colourful, shining, exotic objects and the settlement and subsistence strategies required to acquire such objects; and the adoption of a wide range of everyday objects which materialized shared social practices in hundreds of households across the KGK-VI network.

Network expansion in the Tripolye – Cucuteni network and the steppe zone

The second network for consideration is defined by a very different set of processes from those leading to the KGK-VI network – the formation of prestige goods exchange networks between the forest-steppe and steppe Neolithic communities in the Dniester, southern Bug, Dnieper, Donetsk basin and Volga basin and agro-pastoral groups who used Cucuteni – Tripolye pottery in eastern Romania, Moldova and south-west Ukraine (Fig. 2). These linkages led to an extensive network stretching from the East Carpathians to the Volga valley in the period around the time of Varna. This network was far looser than the KGK-VI network, because of the very varied antecedent communities found in contrasting palaeo-environments. Before we turn to the networks at the time of Varna, it is important to consider the long-term build-up of interactions between farmers and foragers in the North Pontic zone. We can best do this by considering a two-stage interaction process: (1) the expansion of Pre-Cucuteni III – late Tripolye A farmers in the forest steppe zone, which included an expansion of social networks into the steppe zone; and (2) the minor territorial expansion of the Tripolye B1 network in the forest-steppe zone to the north-east, together with a major expansion of the farming – steppe communities network as far east as the Middle Volga basin. Both of these phases can be dated to the time of Varna.

The primary traits of the 'Neolithic' communities of the sixth and early fifth millennium BC in the steppe and forest steppe zones north and north-east of the Black Sea were mobile settlement strategies involving small groups of foragers who used a narrow range of ceramic containers and domesticated cereals and animals as a small part of their broad-spectrum diet (Zvelebil & Lillee 2000; Kotova 2003). There is little evidence for inter-group exchange prior to the emergence of Criş farming communities in the Prut valley and Moldova in the early sixth millennium BC (Dergachev et al. 1991). From that point, however, we can recognize the start of a long series of exchanges through the finding of Bug-Dniester pottery imported into the Criş settlement of Sakarovka (Dergachev et al. 1991), as well as its later import into LBK settlements (Kotova 2003). Balkan metal in the form of cylindrical copper beads is also noted in the Criş settlement of Selishte, Moldova (Anthony 2007). At this stage, the Dniester valley forms a cultural boundary between foragers and broad-spectrum farmers, with no Criş or LBK sites yet known east of the Dniester.

In the earliest phase of the Tripolye – Cucuteni group (Tripolye A & Pre-Cucuteni), there is already widespread evidence for settled

villages (Bodean 2001). Videiko (2011) has suggested a model of short-term sites, occupied for 50 – 80 years, and with re-location to within 1km of the earlier settlement. There were at least two larger Tripolye A sites - Mogilna III (cca. 10 ha) and Stepanivka (cca. 15 ha), the former displaying signs of concentric planning (Videiko 2007). Only one tell has so far been discovered in the entire Cucuteni – Tripolye distribution – the site of Poduri – Dealul Ghindaru, near Moinești (Monah et al. 1998). These settlements comprised comfortable, well-built timber-framed houses with stamped clay floors and wattle-and-daub wall constructions, showing a peak in floor area of 31 – 40m² (Burdo et al., in press). The clearest evidence for mixed farming in the Pre-Cucuteni area derives from the Poduri tell, where identifications have been made of all the main domestic animals, five types of wheat, rarely including spelt and bread wheat, and two forms of barley, as well as the herb coriander, beans, the hazelnut, lime fruit and wild plants such as mallow, saltbush and three types of sorrel (Monah 1985; Monah & Monah 2005). Similar finds have also been made at Tripolye A sites with the addition of small quantities of millet and oats, peas and vetch (Pashkevitch 1997, 2005). Claims have also been made, but disputed, for arboriculture of apricots, cherry plums and plums at Rusești Noi (Yanushevitch 1980: *contra* = Zohary & Hopf 2000: 178 – 182). If this early claim is supported, it pushes back evidence for the long-term village occupation necessary for tending of fruit trees from the Middle to the earliest Tripolye – Cucuteni phases (cf. Monah & Monah 1997). These developments form a clear indication of both greater sedentism and agricultural (as well as arboricultural) intensification in the Pre-Cucuteni – Tripolye A period.

Marked differences existed in mortuary practices between broad-spectrum farmers and foragers in the sixth and fifth millennia BC north of the Black Sea. No communal cemeteries have been discovered in the Criș, eastern LBK or Pre-Cucuteni – Tripolye A periods (Ursulescu 1984; Anthony 2007). By contrast, there is a series of well-known forager cemeteries, best known from the Dnieper Rapids area, which act as foci for tethered mobility¹ of these communities (Zvelebil & Lillie 2000; Telegin & Potekhina 1987; Kotova 2003). Early imports into these cemeteries include Pre-Cucuteni pottery and an ornament made of Balkan copper (Mantu 1998).

The pottery which characterizes the Pre-Cucuteni and the Tripolye A period varied through time in this 500-year period (Mantu 1998), with increasing diversification in both form and decoration. In the Pre-Cucuteni Phase III, the first use of dark paint applied before firing on a light slip is found (Lazarovici C-M 2010). Ceramics formed the most obvious medium for the display of the aesthetics of colour, brilliance and geometric order. Thus, in terms of colourful and shining objects, there can be little doubt that there was a development in their making and use in the Pre-Cucuteni – Tripolye A period. One of the key points about steppe zone material culture in the Neolithic and Early Eneolithic was that fine wares were markedly absent (Kotova 2003, 2008), reducing the possibilities of bright and colourful forager objects to chipped, ground and polished stone objects. Even here, Kotova (2003) identified fewer than a handful of such objects in the steppe Neolithic settlements, including translucent flint, polished stone axes or axe fragments and quartzite axes and mortars. An exception is the serpentinite bracelet, said to be from a source in the Lower Dnieper steppe area and deposited in the Tripolye A settlement of Novi Rușești (Rassamakin 1999). A wider variety

of bright, colourful objects was deposited in forager cemeteries, especially shell and tooth ornaments (Telegin & Potekhina 1987).

In summary, while not wishing to superimpose a dialectic of oppositions between steppe forager communities and those of the Pre-Cucuteni – Tripolye A groups, it must be emphasized that the differences between them far outweighed the similarities. In the next phase (c. 4600 BC), when the vernacular architecture and material culture of the Cucuteni A – Tripolye B1 communities were a more or less direct outgrowth from Pre-Cucuteni – Tripolye A developments, there is a case to be made that this process is not so much a network linkage between two opposed ideologies and materialities as the demographic densification of already settled land. What are the arguments and counter-arguments to such an expansionist hypothesis?

A key argument concerns the increased number of Cucuteni A / Tripolye B1 sites. D. Monah (1997) has estimated that there were 18 times more Cucuteni A sites than Pre-Cucuteni settlements, while Videiko (2011) posits that the forest and forest steppe zones between the Carpathians and the Dnieper river were ‘barely inhabited’ in the sixth millennium BC, with most settlements concentrated in the major river valleys (e.g. the Dniester: see map, Kotova 2003: Fig. 1). The general point here is that one key advantage of mixed farming is that it permits permanent settlement of a far wider range of site locations than was possible with foraging lifeways. There is undoubtedly a bias against interfluvial sites since the main, non-systematic reconnaissance has been devoted to the terrace locations of the main valleys. While in the Pre-Cucuteni – Tripolye A period, there is evidence for heavy ground and polished stone tools that could have been used as hoes for the creation of a tilth in interfluvial chernozems, such heavy tools are not found in the forest-steppe or steppe Neolithic (cf. perforated antler hoe ground stone hammer: Kotova 2003: Fig. 23/5). This is clearly an argument for the movement of mixed farmers into the interfluvial zones of the Dniestr – Dniepr zones rather than for indigenous forager settlement, with a major contrast in the degree of sedentary settlement between farmers and foragers.

The increased level of exchange interactions between Tripolye B1 and Early Eneolithic steppe communities (Sredni Stog: Kotova 2008; Skelya: Rassamakin 1999) opened up the possibility for the wider adoption of food production in the steppe zone (Kotova 2008). However, the evidence that Kotova (2008) marshals for actualizing this potential, whether in terms of grain impressions in pottery or animal bones in settlements, remains as minimal as in the steppe Neolithic (Kotova 2003). Thus, little additional agricultural or pastoral intensification can be identified for either Tripolye B1 as compared to Tripolye A or the Late Dnieper-Donets as compared to the earlier period.

The same is clearly not true for the mortuary zone and the related materialization of social changes in grave goods. While the absence of communal cemeteries continues to characterize Cucuteni A – Tripolye B1 communities (Bem 2007: 251-4), there is a major growth in cemeteries in the steppe zone south of Tripolye B1 as well as in the steppe zone as far east as the Volga basin. A series of well-known ‘wealthy’ steppe graves, including Giurgiulești (Bicbaev 2010) and Krivoy Rog, the Novodanilovka-type cemeteries of the Dnieper-Donets group and the Khvalynsk

¹ Tethered mobility, *pace* Rowley-Conwy (2003) for the Ertebølle, is here indicated by the presence of permanent cemeteries acting as a long-term focus for shifting settlements.

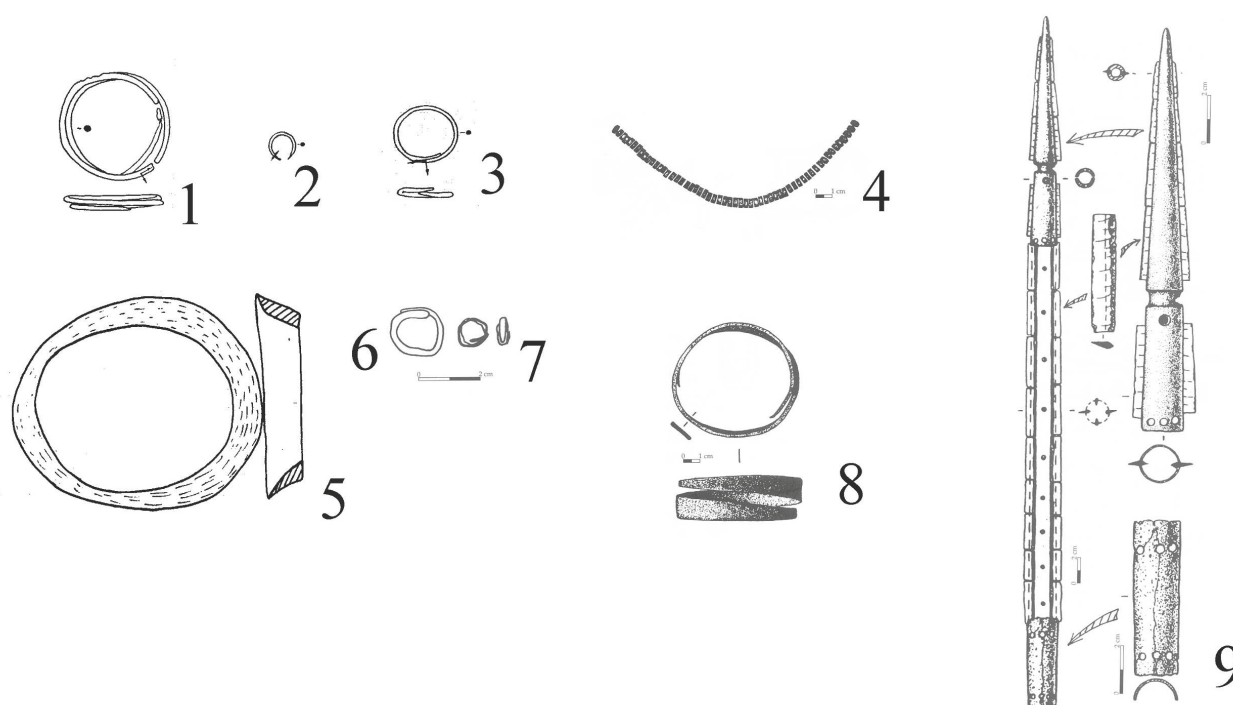


Fig. 4 Prestige goods from the steppe zone: 1- 3: Khvalynsk copper ornaments (source: Ryndina 2010); 4, 8: Krivoy Rog copper ornaments (source: Rassamakin 1999); 5: Lysaya Gora Spondylus bracelet (source: Rassamakin 1999); 6 - 7: Nikolskoe ornaments of gold (2) and copper (3) (source: Rassamakin 1999); 9 - Giurgiulești ceremonial flint and bone lance-head (source: Rassamakin 1999).

cemetery (Agapov 2010)², can be dated to the Varna period (4650 – 4450 BC). For Anthony (2007: 173), the grave goods in these sites document how ‘social prestige had become closely linked to the accumulation of exotic commodities, including copper’, to which may be added gold and marine shells (Fig. 4). These sites share the same two key characteristics – the elaboration of social differences using largely exotic, colourful and shining objects within local mortuary practices, whether shaft-graves under barrows (Giurgiulești), deep pit graves with red ochre (Krivoy Rog) or the local flat grave tradition (Khvalynsk). While there was some limited development of this aesthetic of colour, brilliance and exoticity in the period before 4700 BC, the aesthetic became fundamental in the Varna period. The principal features of such an aesthetic have been developed elsewhere (Gell 1992; Saunders 2003; Chapman 2007, 2008, 2009) and involve a striking visual culture that embodies the spiritual powers of shining light and flashing images. To a steppe world whose object-based colours were limited, these impressions would have offered differential access to the ritual world and possibilities of ritual power. Anthony (2007) has discussed the emergence of a new kind of social power in steppe societies whose very fluidity led to both economic ‘winners’ and losers’ – a power based on gift-exchange, long-distance trade and cults involving public sacrifices and feasting. The depositional evidence suggests that the key elements of this scenario are linked to the Varna effect.

Commentators are divided upon the significance of the Tripolye groups in the transmission of these innovations into the steppe world. The basic point is that analyses of steppe metalwork has

shown that the metal in Tripolye A sites and hoards (e.g. Karbuna), as well as Giurgiulești, the Novodanilovka-type cemeteries and the Khvalynsk cemetery derived from Balkan sources – in particular the Ai Bunar mine in the Bulgarian Sredna Gora (Chernykh 1978, 1992; Ryndina 1998). For Rassamakin (1999:132), the Tripolye groups acted as ‘catalysts for change in the old Neolithic economic and social systems’. Anthony (2007:175) concurs, suggesting that contacts between the Dnieper-Donets group and Tripolye A ‘seem to have intensified after about 4500 BCE’ (cf. Zvelebil & Lillie 2000). Equally, Kotova (2008) posits not only prestige goods exchange but also marriage exchange between Tripolye B1 and steppe populations. However, Rassamakin (1999) and Kotova (2008) also support a different mechanism for contacts between the steppe zone and Varna, viz. direct procurement by long-distance specialists from steppe communities travelling far to the west to procure metals from the Varna and Gumelnița areas, on the basis of steppe-type barrow burials and the distribution of polished stone sceptres and mace-heads. Clearly there is an urgent requirement for some isotopic analysis of human bones from steppe-like burials in the Balkans to clarify this point. One argument possibly favouring direct procurement is the ‘archaic’ nature of what are the very rare copper objects in the Tripolye group (Korvin-Piotrovsky 2008). However, the deposition of the Karbuna hoard (Dergachev 1998, 2002), with its many stylistic parallels with the Varna grave goods, appears to counteract this view.

However, none of these authors appears to recognize the common theme underpinning both of the mechanisms - the Varna effect on **both** nearby **and** remote communities. It can hardly be a coincidence that the widespread acceptance of new forms of painted pottery, copper and gold objects and marine shell

² The problem of the supposedly early dates for the Khvalynsk cemetery – 4900 – 4630 BC (Timofeev & Zaitseva 1997; Kotova 2008: 122) – has been resolved through David Anthony’s correction of the pre-calibrated dates by cca. 400 years because of high ¹⁵N levels in the human bone samples. The corrected, calibrated dates now stand at 4700 – 4600 BC (Anthony 2007: 182).

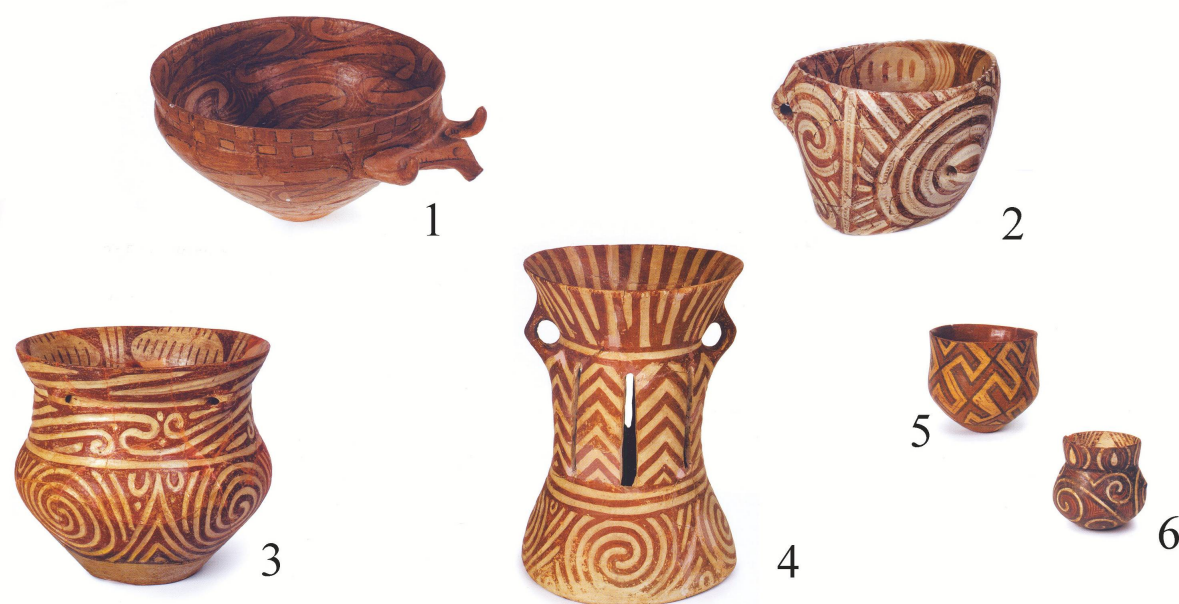


Fig. 5 Cucuteni A pottery: 1: Poienestî; 2 - 4: Drăgușeni - Ostrov; 5: Bodești - Cetățuia - Frumușica; 6: Dumești (source: Lazarovici 2010).

ornaments³ falls within the Varna period. For a final example of this process, let us turn to Cucuteni painted pottery.

In Moldavia and Moldova, the origin of the Cucuteni A1 phase has been dated to the 46th century at Poduri, with a later date for the end of Tripolye A further east (Mantu et al. 1998; Burdo 2005). In the Cucuteni A1 phase, settlement nucleation, material cultural diversity and elaboration and the importance of exotic, shiny and brilliant objects all increased in comparison with the Pre-Cucuteni III phase. Dergachev's useful distribution maps of the various Tripolye – Cucuteni phases (Dergachev 2002:101, Fig. 6.2) shows that the major expansion of the area in which communities used novel painted wares was the Tripolye A phase, coeval with Pre-Cucuteni III and the start of Cucuteni A. It was during this period – the time of Varna – that bichrome painted pottery was developed (Ellis 1984). Ellis goes on to argue that three ceramic innovations – improved firing conditions, the discovery of black mineral paints that held its colour in an oxidising atmosphere and the consistent use of white slips – enabled the full exploitation of a new aesthetic of surface-decorated pottery (Ellis 1984: 119 – 121) (Fig. 5). Once these innovations were in place, other developments, such as the widespread use of pottery kilns, allowed the shift from household pottery production to regional production or, as she proposes, 'the mass production of pottery' (Ellis 1984: 159, 207-8). Thus, the potential of a new aesthetics of colour and brilliance in Pre-Cucuteni III - Tripolye A ceramic production led to even more fundamental developments in the Cucuteni A – Tripolye B1 phase.

In summary, there were major changes in the Varna period not only in the steppe zone far to the east of the Danube but also in the Cucuteni – Tripolye zone rather closer to the Black Sea. While increased sedentarisation in the forest steppe zone is well documented, there is less evidence for greater sedentarisation in the steppe zone but the argument for greater sedentism after 4700 BC has been forcefully made (Zvelebil & Lillie 2000). It can

be connected to the stimulus to increased cattle herding linked to gift-exchange and long-distance exchange (Anthony 2007). There is divergent evidence for the expansion of the mortuary zone in the North Pontic area, with no sign of communal cemeteries in the Tripolye B1 – Cucuteni A phase but the emergence of differentiated burial sites in the steppe areas both south and east of the forest steppe zone. Finally, the strongest evidence for a Varna effect lies in the prestige goods exchanged through Tripolye and Sredni Stog communities and, ultimately, all the way to the Middle Volga basin.

Discussion

In what ways did the Varna effect operate? It is in the nature of exchange networks that both individuals and objects moved over potentially great distances. The origins of exotic materials such as the *Spondylus* shell, copper and gold could also presence their sources, in effect moving places along those same exchange networks (O'Connor et al. 2010). Moreover, the objects that some people attracted from afar also materialized their socio-political relations with distant polities. The additional effect of the aesthetics of colour and brilliance on these exotic objects provided those individuals and groups laying claim to the objects with a potent source of ritual distinction. A successful 'domestication' of exotic objects in the local context enabled the actualization of such potential (Chapman 2002). Insofar as Varna-type objects, objects directly inspired by Varna objects or objects copied from Varna-type objects have been found over 1,000 km from the Varna cemetery itself, it is worth noting that the further the source of the exotic objects, the greater their potential significance to 'local' communities.

The argument here is that the impact of the Varna objects themselves would lead to local cultural change, whether in the means of producing exchangeable surplus for exotica and/or in the social structures supporting communities which have domesticated the exotic objects. Surplus production here may have meant an increased sedentism, with greater production potential in both arable and pastoral practices. Alternatively, the increased

³ Kotova (2008) mentions the imitation of a Balkan *Spondylus* form in copper at the Aleksandrovska cemetery, as well as the imitation in alabaster of a shell ornament type at the Petro-Svistunovo cemetery.

emphasis on arable and/or pastoral production may have led to greater productive yields independently of increased sedentism. The creation of an arena of social power potentially at least partly independent of the social space of the domestic arena may have allowed statements about social power relationships which were not possible to be made in the traditional domestic arena (Chapman 1991).

The obvious reasons for the differences in network outcomes between the KGK VI network linkage and the Cucuteni – Tripolye – steppe exchange network were related to major prior differences in environment and lifeways, as well as the limited ‘penetration’ of the farmers’ object world into the everyday life of steppe communities. The KGK VI network linkage was based, for the most part, on similar increased sedentism in all three areas as well as the wide range and increasing numbers of quotidian objects used in all areas in presumably similar ways. The expansion of the area within which Tripolye A painted pottery was used may well have incorporated forest-steppe foragers living in the main river valleys into the overall farming social space. But the steppe groups continued their traditional lifeways for several hundred years, despite low-level interaction with their farming neighbours. The strengthening of the mortuary arena in the steppe zone created a social space where exotic objects and associated aesthetic concepts could be ‘domesticated’ outside the domestic arena of steppe groups, where the influence of farming pottery techniques was limited to changes to local pottery forms much more often than imported vessels. There can be little doubt that this division between mortuary and domestic arenas, with contrasting materialities and social significances, caused social tensions within steppe communities; perhaps such tensions led to further means to domesticate the innovations which certain persons or groups favoured (e.g. polished stone tools). In strong contrast, those few areas of the KGK VI network in which communal cemeteries were created (e.g. north-east Bulgaria) emphasized the close spatial and social links between the cemeteries and neighbouring tells (e.g. Targovishte: Todorova 1982; Cholakov & Boev 1986). It remains a puzzling feature why communal cemeteries have yet to be recognized (and perhaps indeed did not exist) in the Cucuteni A – Tripolye B1 phase (cf. Bailey 2005; Chapman 2000). One by-product of this absence was that the domestication of imported steppe pottery and ornaments took place almost exclusively in the domestic arena.

To the extent that the core of Varna symbolism comprised flamboyant material culture in the mortuary domain, the Varna effect can be measured by the extension of both practices into adjacent and distant regions. Thus, the Varna effect is limited in terms of mortuary practice in southern Bulgaria and all of the Tripolye-Cucuteni groups. Moreover, it could be argued that in communities where prior mortuary practice included the establishment of communal cemeteries, the Varna effect was marginal since cemeteries were present before the Varna time (e.g. the Dnieper Rapids group). However, this was not true of all areas, such as the north-west Pontic steppe (Giurgiulești) and the Middle Volga basin (Khvalynsk). However, the elaboration of an aesthetics of colour, brilliance and exoticity characterized all of the KGK VI network, as well as the extension of the Tripolye A distribution as far north-east as the Middle Dnieper valley. Local domestication of painted fine wares within steppe pottery-makers’ domestic sites was, however, less successful than the incorporation of Varna-style metal objects into the mortuary arena. The opposite effect could be maintained of steppe pottery traditions making an impact upon Tripolye – Cucuteni material culture through the presence of at first imported, and then locally produced, shell-

tempered steppe pottery forms (the so-called ‘Cucuteni C’ pottery: Rowlett & Shaw 2005).

A final point to consider is the disappearance of elaborate steppe burials after the Varna period (Rassamakin 1994), an observation that is mirrored in Videiko’s (1994) comment that steppe ‘influences’ on Tripolye communities also declined after the end of the dominance of the Balkan metallurgical centres.

The widespread Varna networks that have been outlined here are the predecessors of the extensive chiefdom-oriented exchange networks which characterized the European Bronze Age – networks which Kristian Kristiansen has researched throughout his career (e.g. Kristiansen 1987; Earle & Kristiansen 2010, Chapter 8). There are two interesting similarities between the Varna network and the Central – North European network in the 1987 study: the mortuary focus of the original Central European core and the Varna cemetery and the relations developed between the South Scandinavian farming core and the North Scandinavian hunter-gatherers, in comparison to the North Pontic forest-steppe – steppe relations. Whether it would be possible to characterize these east European developments in terms of changing core-periphery relations would depend on the extent to which economic processes in the three areas are sufficiently differentiated to create core conditions.

Conclusions

The question of the existence and strength of the Varna cemetery’s effect on neighbouring groups and even remote communities has been assessed using two networks – the network linkage of the Kodzhadermen – Gumelnița – Karanovo VI network in the East Balkans and the vast network linking the Cucuteni – Tripolye groups to the steppe communities as far east as the Middle Volga basin. Four important conclusions can be proposed:

The Varna effect can be seen most strongly in terms of the spread of colourful, shiny and exotic objects into the domestic arenas of the KGK VI and Cucuteni-Tripolye networks and the mortuary arenas of the steppe networks.

The domestication of Varna-type tools, weapons and ornaments and Tripolye painted fine wares within the domestic arenas of the North Pontic steppe communities was, by the same token, far weaker than in the KGK VI and Tripolye networks, where the wide range of everyday material culture enabled a denser development of convergent social practices.

There is currently much stronger evidence for increased sedentism and agro-pastoral intensification in response to the demands of the Varna effect for surplus products in the KGK VI network and Cucuteni – Tripolye forest-steppe networks than in the North Pontic steppe zone, although pastoral intensification may be harder to identify.

There are both signs of the Varna effect and a limit to the Varna effect in the wide variety of local communities under consideration here. The expansion in the distribution of Tripolye fine painted wares in the forest-steppe zone and the spread of metalwork in steppe domestic arenas marked major cultural effects, while the absence of mortuary arenas in parts of the KGK VI network and all of the Tripolye-Cucuteni network revealed crucial rejections of the innovations concentrated at Varna.

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WHAT DISTINGUISHES CAUCASIAN MEGALITHS FROM EUROPEAN ONES?

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Abstract: The Caucasian dolmens represent a unique type of prehistoric architecture, built using precisely dressed stone blocks. The monuments date between the end of the fourth- and the end of the second millennium BC. Their origins remain unknown. Since the beginning of the nineteenth century numerous hypotheses have been advanced to account for the origins of the dolmens in terms of external migrations, and today this search for parallels still remains a popular undertaking, albeit sometimes to the detriment of a more in-depth study of the dolmens in terms of their local cultural, chronological, social and ecological contexts. Increasingly high standards of recent excavations in the Caucasus, applied to the entire structure of the tomb and not only to the interior of its burial chambers, are showing that the comparisons between plans of poorly excavated megalithic sites, both European and Caucasian, are dangerously misleading.

Keywords: Megalith, dolmen, reconstruction archaeology, Caucasus, Zhane Valley, Dzhubga, ashlar masonry

Introduction and background

Thousands of prehistoric megalithic monuments are known and have been studied throughout the world. Some of the least known and investigated by archaeologists are those in southern Russia. Also known as dolmens, they can be found in the western Caucasus, on both slopes of the Great Caucasus range, and on the north-east coast of the Black Sea (from Anapa to Ochenchira), in an area of approximately 12,000 sq. km covering both Russia and Abkhazia (Fig. 1).

The Caucasian dolmens represent a specific type of prehistoric architecture, built using specially dressed, precision-cut stone blocks. The monuments date between the end of the fourth millennium and the end of the second millennium BC (Trifonov 2001). Currently the archaeological catalogue lists over 3,000 dolmens usually clustered in groups of two or three to several dozen dolmens (Markovin 1997). The largest cluster at Kizinka consists of over 500 dolmens (Markovin 1978). While generally unknown to the rest of the world, these Russian megaliths are comparable to the great megaliths of Europe and Asia in terms of chronology and architectural characteristics. Yet their origins remain unknown.

The dolmens of the western Caucasus were first recognized in Western Europe in the first half of the nineteenth century thanks to the publications of amateur archaeological enthusiasts: a French merchant in the service of the Russian Empire, Taitbout de Marigny (1821), and a political officer of the British Embassy in Istanbul who illegally visited the Caucasus, James Bell (1840). In 1833 the Swiss scholar Dubois de Montpereux examined dolmens in the environs of today's Novorossisk on his visit to the Caucasus that had been organized by Czar Nicholas I. De Montpereux (1843) was the first person to recognize parallels between the dolmens of the Caucasus and megalithic constructions of Western Europe (e.g. in Brittany) and in fact initiated a comparative analysis of them (Montpereux 1843). Such comparative investigations in Russia were supported by Count A.S. Uvarov (Uvarov 1876, 1878), one of the founders of Russian archaeology, and in Europe by E. Chantre (Chantre 1885). Today this search for parallels still remains a popular undertaking (Lyonnet 2000; Hansen 2010;

Rezepkin 2010), albeit sometimes to the detriment of a more in-depth study of the dolmens in terms of their local cultural, chronological, social and ecological contexts.

The basic grounds for classification of the dolmens were established by an historian of the Kuban area, E.D. Felitsyn (Felitsyn 1904), and developed further in the ethnographic works of L.I. Lavrov (Lavrov 1960) and in the archaeological studies of V.I. Markovin (Markovin 1978). Models of the evolutionary development and interpretations of the diverse forms of dolmen architecture have often been re-examined on the basis of hypotheses on their origin. At the same time, some definitions related to the classification of European megalithic tombs (e.g. gallery graves, passage graves) developed in the 1950s (Daniel 1958) have been introduced into the Soviet archaeology (Nikolaeva & Safronov 1974; Nikolaeva 1981; Rezepkin 1988). Discussions about their chronology continued for a quarter century until the discoveries in 1898 by N.I. Veselovski of megalithic burials at the Tsar's station (today Novosvobodnaya) which led to the scholarly consensus that they dated to the Bronze Age¹ (Spitsyn 1903; Gorodtsov 1910; Tallgren 1911).

The problem of the origin of the dolmen culture currently remains unresolved. Convincing indications of the autochthonous formation of the construction of megalithic burials in the western Caucasus have not yet been found, and, for this reason, numerous hypotheses have been advanced to account for the origins of the dolmens in terms of external migrations (Bonstetten de 1865; Uvarov 1876, 1878; Chantre 1885). The basic similarity of the Caucasian dolmens with the megaliths of Europe and Asia led to the elaboration of several hypotheses that replaced the older, unsubstantiated Indian or South Asian theory (Bonstetten de 1865). North European and Mediterranean hypotheses were advanced. At the beginning of the twentieth century the Russian archaeologist A.A. Spitsyn (Spitsyn 1903) proposed that the ceramics found in 1898 in the megalithic burial at Novosvobodnaya were linked in their origin to the so-called globular amphora culture of Western Europe. A. Tallgren developed a distinctive interpretation of this

¹ Roughly speaking the Bronze Age in the Caucasus covers the period between 3500 and 1200/1000 BC.



Fig. 1A Europe and western Caucasus;

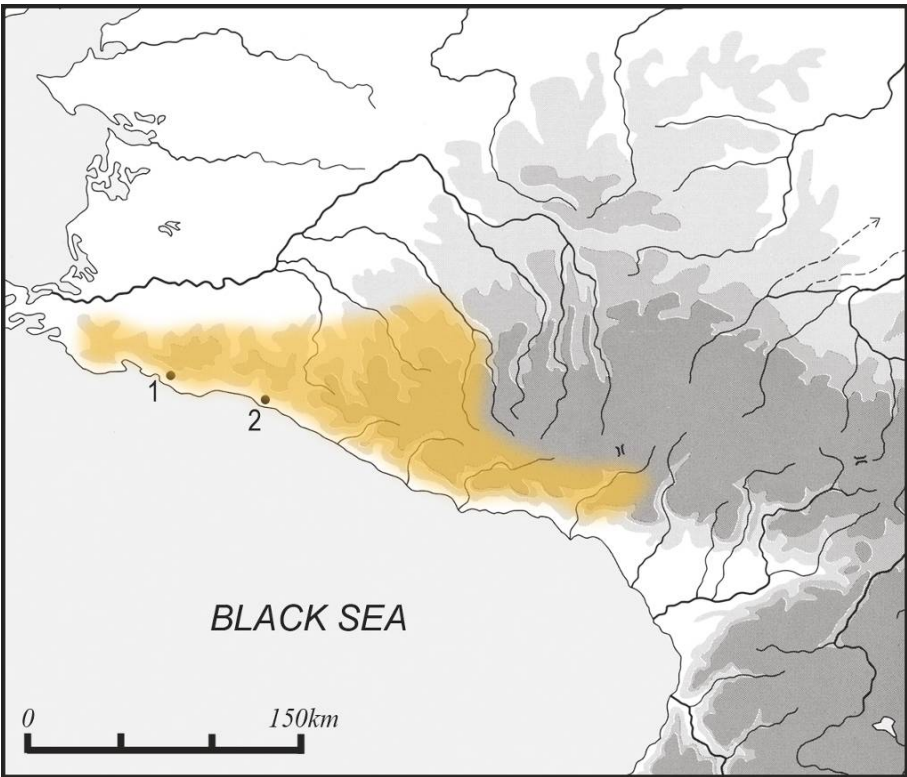


Fig. 1B western Caucasus: 1 – Zhane; 2 – Dzhubga; coloured area – dolmens of the western Caucasus.

theory. He believed that the pottery component of the dolmen culture originated in Europe, while the dolmen concept itself is an Asiatic contribution (Tallgren 1933). In Germany this theory was further advanced by K. Struve who proposed a link between the globular amphora cultures and funnel beaker cultures with the origin of the burials at Novosvobodnaya (Struve 1955).

The distribution of megalithic tombs along the Atlantic, Mediterranean and Black Sea coastlines resulted in the belief that maritime activity may have played a part in the dissemination of the megalithic concept (Childe 1948). L.I. Lavrov was the first in Russia who proposed a possible borrowing of the megalithic idea from somewhere in the Mediterranean as a result of 'marine expeditions of Caucasian Peoples' and V.I. Markovin explicitly suggested the Pyrenees in the Iberian peninsula as the area of this borrowing (Lavrov 1960; Markovin 1978). Finally, A.D. Rezepkin proposed a compromise variant between the North European and Mediterranean hypotheses. In his opinion, the appearance in the Caucasus of Novosvobodnaya burials (early megaliths) is linked with migrations of the funnel beaker culture while the appearance of 'true dolmens' (late megaliths) in the Caucasus is the result of migrations from the Iberian Peninsula (Rezepkin 1988).

Another reason to keep holding the Caucasian dolmens in focus with regard to the study of European prehistory was what could be called 'Indo-European aspects' of the subject. The foundations of the approach were laid by G. Kossina in the very beginning of twentieth century. He believed in cultural and ethnic-linguistic identity between the Globular Amphora Culture (German: *Kugelamphoren-Kultur*) and *Indogermanen* (Kossina 1902). The hypothesis of a western homeland of *Indogermanen* has led to the suggestion of massive wave-like migrations of belligerent farmers (German: *kriegerisches Bauernvolk*.) from the west to the east as a possible explanation for signs of cultural similarity from Germany up to the Kuban area and Armenia in the Caucasus (Antoniewicz 1936; Schulz 1936). Since the end of WWII for some well-known reasons the Kossina's idea of a massive movement of *Indogermanen* to the east quickly started to become stale, but did not go out of use completely. In Russia the hypothesis of a West European origin for the Caucasian megaliths and their connection with the hypothesis of a West European homeland of Indo-Europeans (or Aryans), still finds support (Nikolaeva & Safronov 1974; Klein 1990, 2010; Rezepkin 2010).

The intricate plot of early Indo-European studies was thickened by the fact that almost the same list of true and virtual signs of similarities between West European and Caucasian megaliths has been exploited by an alternative hypothesis of the Aryan homeland. The hypothesis of the eastern homeland for the Aryans was put forward by G. Childe and supported in detail by J.E. Forssander (Childe 1925; Forssander 1933). At that time both believed that the Western European Globular Amphora Culture and megaliths with porthole slab (German: *Steinkisten mit Seelenloch*) were derived from tombs in Novosvobodnaya, in the north-western Caucasus. Quite the same point of view on the so-called window cists from Saxony and Hesse has been expressed by A. M. Tallgren, who believed that their origin was influenced by the Caucasian dolmens (Tallgren 1933:202). For the sake of balance it is worth noting that G. Childe himself was not quite sure of that idea because of still unsolved problems for the dating of the Bronze Age Caucasus chronology at that time (Childe 1926). Though G. Childe expressed his doubts clearly, and finally even renounced his own research into Indo-European origins as among 'childish' things he wrote (Childe 1958), the hypothesis of the East European homeland of the Indo-Europeans is still in widespread use. The

popularity of the concept is substantially thanks to M. Gimbutas who has done much to develop and propagate the hypothesis. And again the Globular Amphora Culture, Caucasian megaliths and movement of people from the northern Caucasus are parts of her *Indogermanen* scenario (Gimbutas 1986). In more recent versions of the hypothesis, Caucasian megaliths no longer result from long-distance migrations from the Caucasus to Northern or Central Europe nor are they ascribed to the Indo-European family of cultures (Mellory 1989; Anthony 2007). Instead one finds a hint at the existence of long-distance cultural contacts between the northern Caucasus and Northern Europe (Sherratt 1994; Hansen 2010). The paradox is that the new hypothesis exploits almost the same poor repertoire of fragments of similarities between the Western European and Caucasian megaliths which was adopted in ethnic-linguistic hypotheses a quarter of a century ago.

In 1994 A. Häusler demonstrated that the model for an external (West European) origin for the Novosvobodnaya tombs in the northern Caucasus is unnecessary, unsupported by archaeological evidence and inherently unlikely (Häusler 1994). Since then no persuasive evidence in support of the Western European origins for the dolmens in the north-western Caucasus has come to light. The reasons for such comparisons today seem far less compelling than was previously thought. Based on the recent excavations it has been established that the diversity of megalithic monuments in the north-western Caucasus is much more extensive than was previously thought using the classification of these remains by V. I. Markovin which were referenced repeatedly in western 'megalithic' literature (Markovin 1978; Joussaume 1988; Mohen 1990).

The diversity of megalithic monuments in the north-western Caucasus

It is not surprising that the substantial lack of comprehensive knowledge related to the development and function of megalithic monuments in the north-western Caucasus has caused the emergence of quite a few controversial hypotheses on the subject. For a long period of time (from the early 1820s until recently), Russian archaeologists practiced an oversimplified, rather primitive and often quite destructive method of dolmen excavation. This method limited itself to first digging inside the burial chamber, then digging a very narrow strip around the façade - or they bulldozed any structures around the burial chamber to provide quick access to it. Since the archaeologists were focused on the burial chamber and collecting grave goods and offerings, they did not pay proper attention to the dolmens themselves. This method of excavation finally resulted in a commonly adopted impression that the Caucasian dolmens were freestanding megalithic burial chambers without any additional external buildings or architectural structures (Markovin 1978; Rezepkin 1988). Recent fieldwork and new archaeological evidence suggests otherwise and demonstrates quite clearly that this view of Caucasian dolmens stands very far from the truth. It is quite appropriate to make a comment here that, a long time ago, the West European archaeological study of megaliths encountered the same problem until more critical and sophisticated methods of excavation '...revealed that the allegedly simple dolmens are just the most stubborn remnants of more complex structures' (Childe 1948).

In the late 1990s our team from the Institute for study of material culture history, Russian Academy of Sciences (Saint-Petersburg) introduced to Russia innovative methods for unearthing megaliths. In 1994 Prof. K. Kristiansen invited me to join the Thy project in

Denmark where I had the opportunity to gain a little experience in the restoration of megaliths from my Danish colleagues, Dr. Svend Hansen and Dr. Torben Dehn (see this volume: Dehn, Hansen & Westphal), with whom I worked for a few weeks. Frankly, I was really impressed with what they did. On returning to the Caucasus, I decided to combine the advantages of a large scale excavation with a small scale restoration of megaliths. The concept was based upon the integration of a carefully planned excavation and reconstruction with the aim of understanding the original building methods of the dolmens. In this way, restoration can be carried out in an authentic way based upon archaeological documentation and with no use of modern materials. So, we introduced into domestic archaeological practice not only new methods of 'reconstruction archaeology' but substantially customized them in accordance with the type of monuments and the specific aims of the project.

Modernized methods of excavation have resulted quickly in the unearthing of previously unknown external structures of burial chambers (such as cairns, courtyards, roofed passages, dry walling, ramparts, ritual places etc.). These methods provided a unique opportunity to learn more about prehistoric building techniques and burial rituals. It is hard to believe now, but before our excavations in the Zhane Valley (1997-2005), a cairn itself (Russian: *kurgan*), as an intentional stone construction around megalithic burial chambers, was disputed as a highly improbable or later addition.

The difference between old and new images of one and the same dolmen can be demonstrated by two examples: the dolmens from the Zhane Valley and from Dzhubga.

The Zhane dolmens

The group of three dolmens were built in a row, and stand on a hill overlooking the Zhane River near the coastal resort town Gelendjik (Fig. 1). It was introduced into archaeology at the very beginning of the twentieth century (Felitsyn 1904). Since then, the image of the most impressive dolmen of the group was reproduced a number of times in different publications in Russia and abroad (Letchenko 1931; Tallgren 1933, 1934; Markovin 1978; Voronov 1979). The dolmen was presented as a free-standing rectangular chamber decorated with carved designs both inside and outside. The inside chamber walls of the central dolmen are decorated with carved zigzags and hanging triangles running in a band around the chamber. The butt-ends of the side slabs shaping the portal of the dolmen were decorated with vertical zigzag chevrons. Another relief decorative motif is found on the top of the porthole slab. It can best be described as a lintel held up by two columns or an image of a dolmen in front with a porthole in the centre (Fig. 2). But what did the dolmen look like originally?

The excavations of the 1999-2001 season unearthed very striking structures that make up the true dolmen construction (Trifonov 2009a). A paved courtyard (300 m²) lay in front of the dolmen, surrounded by the horseshoe-shaped cairn of about 25 m in diameter which was made with carefully selected (by shape and size) river boulders. The courtyard is separated from the cairn with 2.5 m high dry walling stretching for over 24 m. The wall was made with big, well-dressed regular shaped sandstone blocks (Fig. 3). The excavations revealed more of the massive dry walling which shaped a high curb around both the cairn and courtyard. All elements of construction fit each other with tongues and grooves and rest on levelled virgin soil, so that there is no doubt that these structures were part of the original architectural concept.

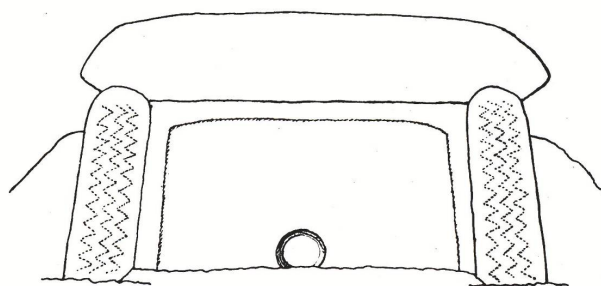


Fig. 2A Zhane dolmen (after Tallgren 1934);

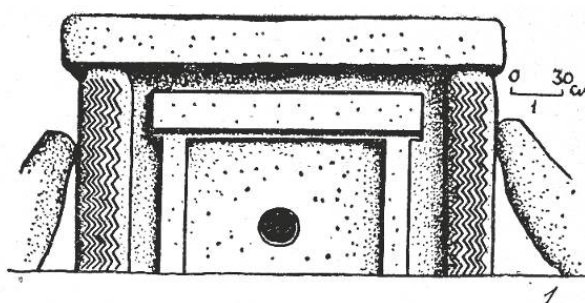


Fig. 2B Zhane dolmen (after Voronov 1979).

The Dzhubga dolmen

The Dzhubga dolmen is located on the Black Sea coast in the Dzhubga River Valley (Fig. 1). Due to its size and extremely original architecture, the Dzhubga dolmen stands out even against a rich background of prehistoric megalithic monuments of the western Caucasus. The first description of the dolmen dates back to 1871 (Bayern 1871) (Fig. 4). On 8-9 July 1886, Countess Uvarova, a member of Moscow Archaeological Society, even made an attempt to start excavation, but had to abandon the venture shortly after beginning due to 'disappointing' results (Uvarova 1904). The Dzhubga dolmen was presented to the international public by E. Chantre and A. Tallgren (Chantre 1885; Tallgren 1926, 1933, 1934). Since then the site has been visited a number of times by archaeologists who published some drawings and descriptions in which the dolmen was described as a free-standing burial chamber with circular dry-walling around the courtyard that was added much later. This was the reason for ignoring the courtyard as a substantial and inherent element of dolmen architecture (Markovin 1978, 1997).

In 2006 the Russian Academy of Science launched the excavation of the Dzhubga dolmen which revealed what is probably the largest dolmen complex along the Black Sea coast in the Caucasus. The complex occupies an area of about 700 m² and comprises a spacious burial chamber, a circular courtyard in front of the façade and cairn around both the chamber and courtyard. Except for the size, the quality of building was extremely impressive. The dry walling of the courtyard was made with big, well-dressed sandstone blocks which were carefully fitted to each other by shape and size (Fig. 5). The outer side of each block was slightly curved to keep the rounded line of the wall. The wall was made of



Fig. 3A Zhane dolmen 2001

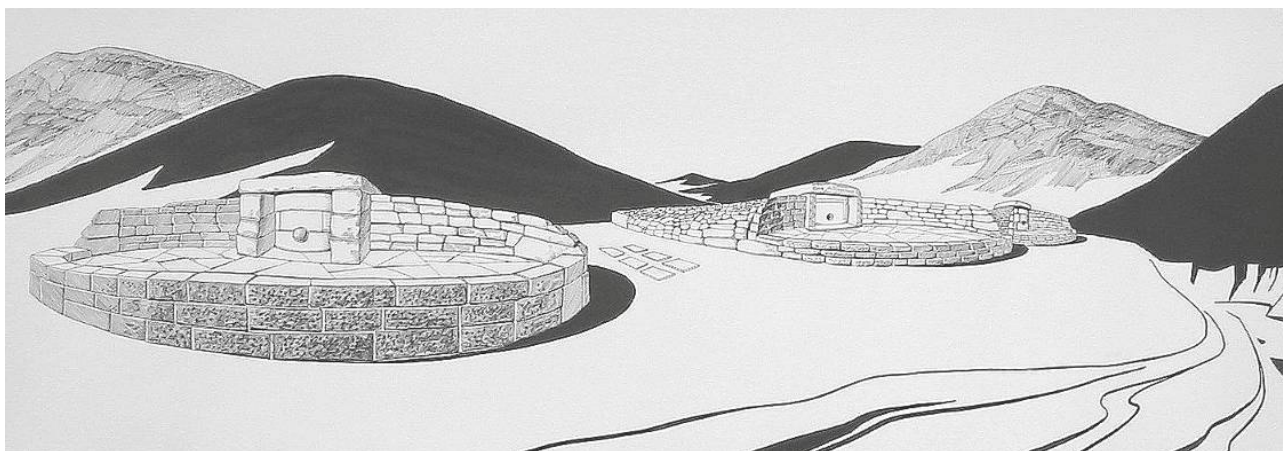
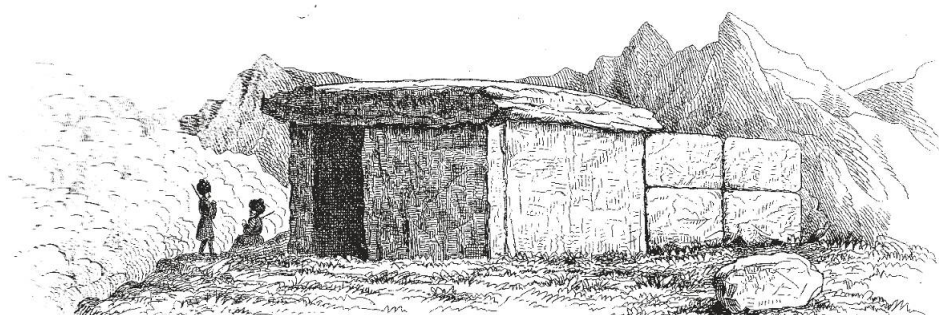
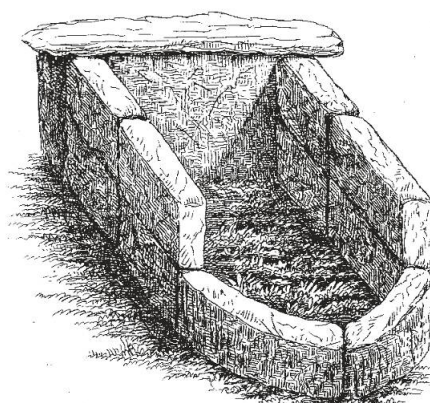


Fig. 3B Zhane dolmens, reconstruction.



Усыпальница (дольмен) около Джубы (в Черном. окр. близь ст. Джубской)
Видъ лицевой стороны.



Видъ джубской усыпальницы съ противоположной стороны.

Fig. 4 Dzhubga dolmen (after Bayern 1871).



Fig. 5 Dzhubga dolmen, 2007.

four layers of stone blocks which were put one above another in ashlar masonry style. The wall was about 2.5 m in height with no signs of any entrance structure. That is, it was an absolutely blank wall! But it is the anthropomorphic and zoomorphic petroglyphs that were discovered on the courtyard walls that really make this dolmen unique. Finally, due to the proper excavation which lasted for three field seasons it was established that the whole construction was a result of architectural and building unity (Fig. 6) (Trifonov 2009).

Generally, radical changes in the field strategy and methods of investigation resulted in a new understanding of dolmen diversity in the western Caucasus. During the last quarter of century it has been established that a massive stone cairn typically surrounded the burial chamber on three sides and that a paved courtyard, portal, roofed corridor or any other kind of antechamber was always set in front of the façade of the dolmen, ensuring access to the burial chamber for periodic interments. The form, construction and dimensions of all three integral components of the dolmens (chamber, antechamber and cairn) significantly varied and in numerous combinations formed previously unknown patterns of dolmen architecture (Trifonov 2001). The dolmens were constructed of slabs and blocks detached from monolithic rocky outcrops or cut directly out of the rock face as was done at the 'Tomb of Midas' in today's Turkey (Midas Şehri) (Akurgal 1985). The burial chambers were trapezoidal, rectangular, circular or

semi-circular in shape, their areas varying in size from 0.25 to 25 m², and reaching up to 3 m in height. The ceiling of one of the large dolmens (Novosvobodnaya, Klady, 40 / 1) was supported by a circular-sectioned, 3 m high stone column (Rezepkin 2000). The paved courtyards and surrounding constructions were equally diverse in their forms and areas.

Aside from their dimensions, forms and constructions, dolmens are distinguished by their decorative finishings that include decorations on the façades and internal walls of the burial chambers with relief geometric drawings. In one case (Novosvobodnaya, Klady, 11 / 54) the walls of the burial chamber were decorated with red ochre (Rezepkin 2000). Geometric signs, traditionally linked to solar and astral symbols, form a special group. Zoomorphic and anthropomorphic representations are exceptionally rare. Paired depictions of 'female breasts' can also possibly be related to the anthropomorphic symbols. Relief depictions on the mushroom-shaped top of the stone plug that always closed the entrance into the burial chamber appear most frequently. As a rule, these figures appear in the forms of concentric circles and figured crosses, and sometimes as phallic symbols (Markovin 1978).

Other megalithic constructions are also associated with the dolmens including: menhirs, ornamented stelae and concentric cromlechs (Shamba 1974; Rezepkin 2000; Vasilenko 2007). Unfortunately, the current description of Caucasian dolmens is

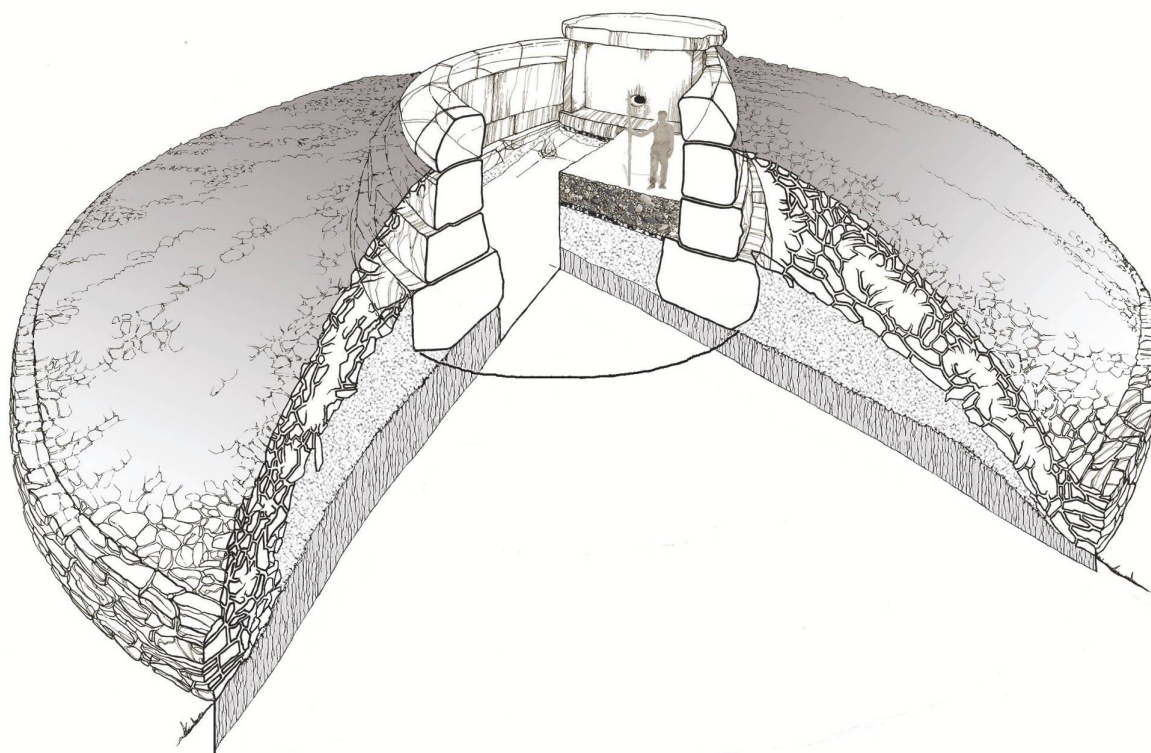


Fig. 6 Dzhubga dolmen, reconstruction.

very far from completion and recent field experience suggests that we are merely on the threshold of investigating and discovering the full range of their diversity.

Discussion and conclusions

From the earliest days of the study of what were usually classed in Russian archaeology as megaliths, or more often defined with the quite archaic and ambiguous term ‘dolmen’, a latent fallacy has been the acceptance of similarities in common forms and building materials as an indication of cultural unity or long-distance contacts. The introduction of formal standards which were adapted from West European archaeology and used to classify the Caucasian dolmens (e.g. gallery graves are comparable to Novosvobodnaya tombs while dolmens represent a kind of passage grave) caused quite biased and misleading classification results from the quest to determine the origin of the Caucasian megaliths (Rezepkin 1988). If confusing megalithic rhetoric is to be omitted, then the open-minded comparison between the Novosvobodnaya tombs and the rest of the Caucasian megaliths demonstrates that all belong to one and the same class of what could more neutrally be described as a chambered cairn. Both the Novosvobodnaya tombs and true dolmens have a chamber, antechamber and cairn as integral parts of construction. Meanwhile, the Novosvobodnaya tombs are quite variable themselves in terms of roofing, for example (flat roof and gable roof) (Rezepkin 2000), and nobody knows for sure the extent to which they are variable in terms of cairn construction, because these structures have not been unearthed at all or were swept away by a bulldozer in the process of excavation.

Whatever the relationship between the Novosvobodnaya tombs and true dolmens in the Caucasus, both groups are very different from any group of European megaliths and any detailed

comparison must be seen as flawed. Even the holes (German: *Seelenloch* in) in porthole slabs, which have been much discussed, are quite different in standard size between Europe and the Caucasus. In other words, even without discussing the topic of cultural context, ritual, artefacts and chronology, there is no solid typological foundation for identifying the Caucasian dolmens with the European megalithic tradition.

They are very different in architectural style, building technology and quality. By all standards the Caucasian dolmens represent one of the earliest traditions of ritual stone constructions that are characterized by regular, multi-tiered layers of ashlar masonry, false domes, the use of developed forms of columns, flat, shed or gable roofing, relief decorations on the surfaces of the façades, decorated walls with anthropomorphic depictions and monumental zoomorphic circular sculptures. In fact, the vague term ‘megalithic’ adds nothing substantial to the description and can be easily omitted. As such, it is no longer obligatory to search for the origin of Caucasian ‘dolmens’ in just a European or Asiatic ‘megalithic’ cultural context. As a result of the new perspective on Caucasian dolmens, a relevant question is raised as to whether the origin of ashlar masonry in the region is completely independent or whether it is due to an outside influence.

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BRONZE AGE MEGALOMANIA

Henrik Thrane

Abstract: This paper examines the phenomenon of megalomaniac monumentalism in the Bronze Age. It draws on the evidence of burial mounds of extreme proportions, the Lusehøj triad in particular, and explores the implications of their size and position in the landscape as well as their impact on it. Representing a huge investment of labour and resources, such mounds were powerful expressions of the elite, but why it was sometimes considered necessary and desirable to construct such monuments remains a riddle.

Keywords: Megalomania, monumentalism, Voldtofte phenomenon, Lusehøj triad, Bronze Age

Introduction

The present Festschrift honours a colleague who has crossed my path through Bronze Age studies over the years, frequently adding fresh and refreshing views, yet using the evidence in ways that differ from my more reserved manner. In particular, he has taken to heart the Voldtofte phenomenon, especially Lusehøj, so re-visiting this topic now seems appropriate.

Megalomania is here treated only in a field where archaeology is able to observe it, individual psychology cannot be my concern. Megalomania lies at the extreme and extravagant end of monumentality. It is related to monuments and is simply the end of the scale. The term is here used for monuments with outsized proportions that show them as absolute exceptions from the normal range of contemporary burial monuments or temples. The idea was always to overawe the living and future spectators.

There is an element of vulgarity involved when monuments used styles and elements which were not meant for, and were not suitable for, the exaggerated size. With simple forms like the cupolae of the tumuli it may be discussed whether such a stage was ever reached, however. The Egyptians like Ramses II, and Hellenistic and Roman rulers, were notorious megalomaniacs, the huge temple at Baalbek being a prime example. Hadrian's tomb or Antiochus I's 49 m high gravel mound on Nemrud Dag may perhaps be more relevant to the present text. However, they were not alone in expressing their ambitions in oversized versions of the monumental architecture of the period. We may think of the Achaemenians at Persepolis (Schmidt 1953), of Nazi or Soviet architecture, or just visit the Belgian capital – or more recent ones – and you will see that megalomania is still very much with us in capitalist societies. Prehistoric Carnac and Stonehenge may join the list which could be expanded considerably if Asia were included. I shall restrict myself to Europe.

I want to introduce an element of relativity, however. While nobody will dispute the megalomaniac character of the examples quoted, there may be others which were genuinely meant as megalomaniac by their constructors but do not appear so to our less naive minds. In societies where the means of expressing monumentality were limited, some monuments may have been conceived and received as megalomaniac, even if their mega status was comparatively modest. Here it will not be necessary to become too sophisticated but the question of relative size is relevant also for Bronze Age monuments.

This paper deals only with one group of megalomaniac monumentalism, namely that expressed by burial mounds. The extreme North European case of Silbury Hill (Whittle 1997)

remains a riddle in the absence of a proper burial. My concern is with genuine burial mounds. The prehistoric tumuli – here restricted to Europe, thus omitting the huge collection of Scythian and other Euro-Asiatic mounds (Menghin et al. 2007) – cover a wide scale from mini size to mega or giant size. Each reader may have his own hit list, but presumably barrows like the Unetice Leubingen (8.5 m x 34 m), Early Urnfield Čaka (>5 m x 35 m), Hallstatt Hohmichele (13.5 m x 85 m), Magdalenenberg (8 m x 120 m) or Hochdorf (6 m x 60 m) and La Tène Klein Aspergle (9.5 m x 60 m) will appear on most of them (Riek & Hundt 1962; Biel 1985; Balzer 2008). The 'royal mound' at Seddin beats most Bronze Age mounds with its 10 m x 68 m (Kiekebusch 1928; Kunow 2003; May & Hauptmann 2012). Quite a few eastern mounds dwarf these tumuli (e.g. Young 1981 & Menghin et al. 2007), however.

Mega mounds may be single, like Seddin, or clustered in agglomerations determined by the landscape like Uppsala Högar (Lindqvist 1936) or form part of a planned and well integrated complex monument like Jelling (Krogh 2007; Jensen et al. 2011). It is no wonder that folklore has associated these mounds with royalty like King Hinz at Seddin (Kiekebusch 1928), the Ynglingas at Uppsala or other kings with various other Swedish mounds (Lindqvist 1936). Swedish research has agreed that these 'royal mounds' belong to the later Iron Age and played an important role in the realm building of the Migration and Vendel periods (Hyenstrand 1984, 110ff). Yet, without excavation we have no date for a monument and without a date any consideration of the historical significance and context will remain speculative. Jelling is unique in having a contemporary inscription linking the mounds (and the final monument) with King Gorm, Queen Thyra and King Harold the Bluetooth (Jensen et al. 2011). It is thus not only their size which makes these mounds royal.

At Jelling, the burial monuments can now, thanks to the ongoing research project (ibid.), be seen to be integrated into a great plan which can only be termed megalomaniac. The ship setting had already been seen as the world's biggest and its size now seems to have been doubled. The whole complex covers a south slope enclosed by a palisade. As the whole complex presupposes careful planning – as well as changes of the plans, the reasons for the physical position in the landscape must have been persuasive at important levels – is it of sacral nature? Surely the old Bronze Age mounds played a (decisive?) role for the whole layout. What caused the royal burial chamber to be placed on top of a normal Bronze Age mound with another – Sorteøj – immediately north-east of the corner of the curiously shaped palisade enclosure?

An interesting problem is how far we may be allowed to transfer these later cases to earlier purely prehistoric situations like the

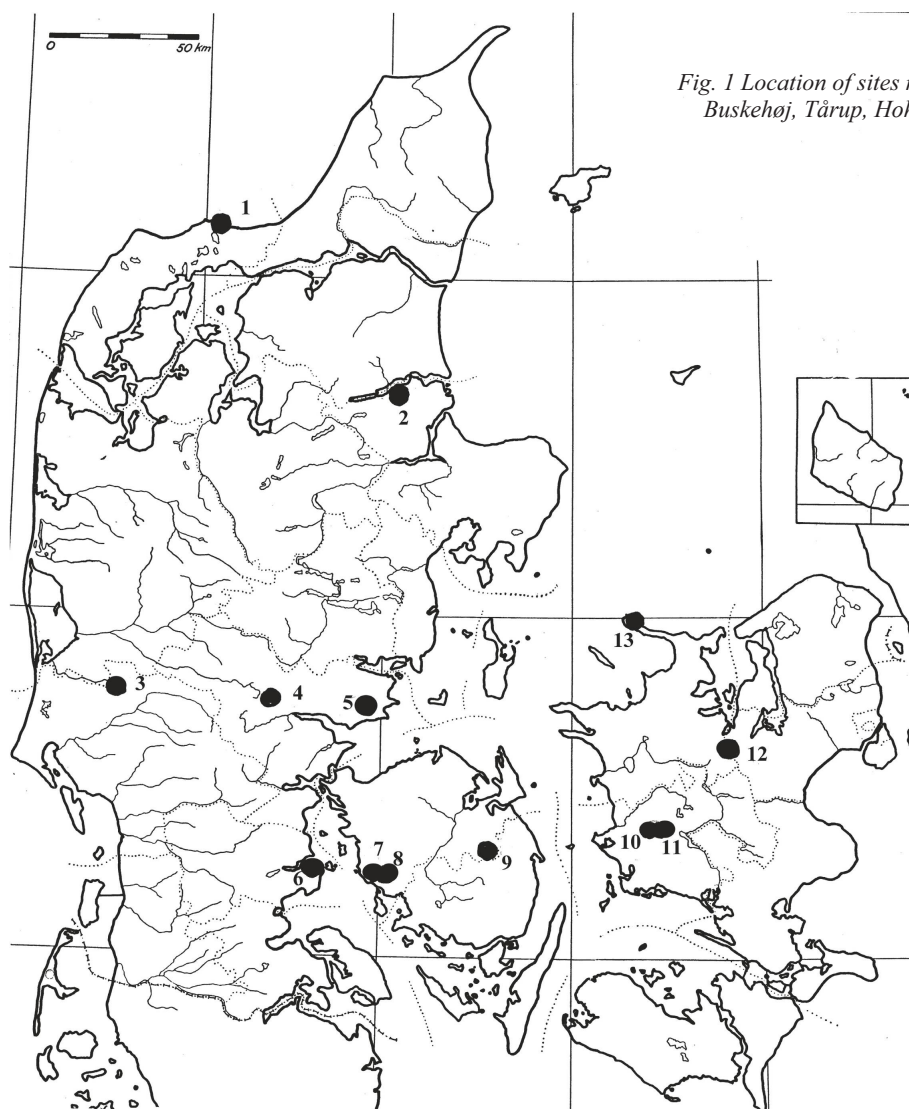


Fig. 1 Location of sites mentioned in the text: Lusehøj-Bohøj-Buskehøj, Tårup, Hohøj, Tamdruphøj, Jelling, Ringshøj, Slotsbjergby.

Bronze Age scenario presented below. The analogy cannot be used to transfer royalty back into prehistory, but it may safely be taken to express associations between mega monuments and the elite.

In Nordic Bronze Age studies the burial mounds have always played a key role. Not only are they the most numerous and most widespread archaeological source, but they supplied the basis for Thomsen's Three Age System with their burials with combinations of bronzes – a first use of context archaeology which marked a giant step forward in archaeological methodology. For generations these burials were the most frequent and multivariate source group available. They remain the best evidence for the existence of the Nordic Bronze Age due to their ubiquity. It has to be admitted that it was the interest in the artefacts from the burials which led Frederik VII, Worsaae and many other early archaeologists, whether Danish or of other nationalities, to dig barrows (Thrane in press).

An interest in the mounds themselves as evidence of the activities of Bronze Age society only began in the 1870s and took a long time to develop into a proper field of study. The old fashion of digging a hole at the centre or a trench through the mound did not produce much knowledge of mound construction or of any other aspects of tumulus archaeology, apart from the burials themselves (Gansum 2004).

Barrows create spaces, mega barrows create mega spaces. During burial and till the erection of the mound, a primary space is created which is subsequently closed off. Then a new kind of space is created: an outer, open air space, including the surrounding area to a mostly unknown extent. This open space (or scene) remains forever (or at least as long as the mound exists) available for any number of purposes which we can hardly begin to imagine.

The Lusehøj triad

Let us begin this case study with Lusehøj on south-west Funen which should be quite well known by now, at least to the dedicatee of this book (Figs. 2-3).

Lusehøj can be shown to have developed into the monumental size of 6 m x 36 m (originally probably 7 m high) during Period V when the mound was laid over two burials, the stone cist AM (ad hoc 14C date of 750 BC) and the cremation pit GX (charcoal 14C dates of 915 and 850 BC) - excavated at an interval of 111 years with very different results, but confirming the extraordinary position of Lusehøj in Scandinavian Bronze Age society. The relationship of the great mound to the mini mound cemetery of Period IV which it covered remains enigmatic. When the mound was first excavated by Frederik VII's local digger, C.F. Langkilde, in 1862, little note was taken of the mound and the brief find

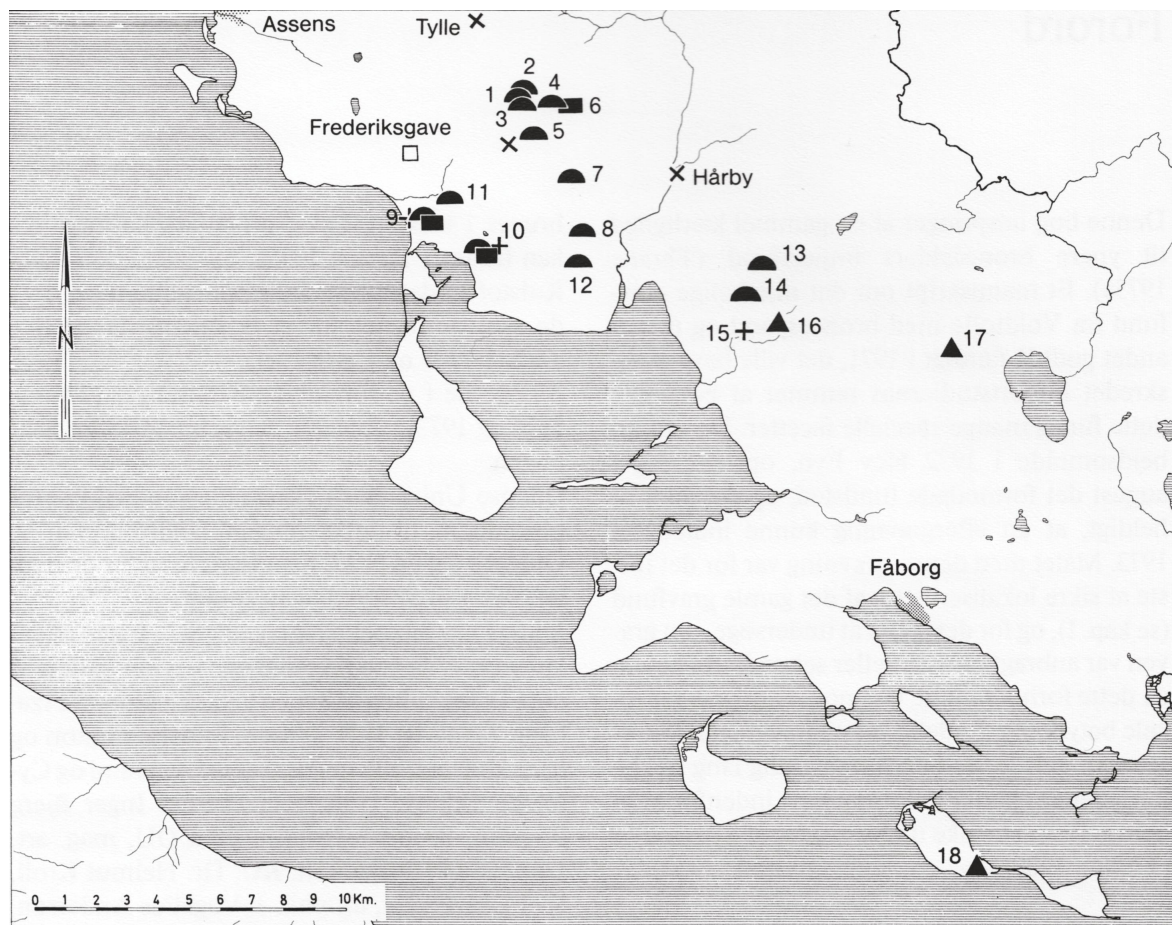


Fig. 2 Map of the Voldtofte region with Kvindehøj (4), Kirkehøj (5) and the Kirkebjerg (6) settlements, Lusehøj (1) Bohøj (2) Buskehøj (3).

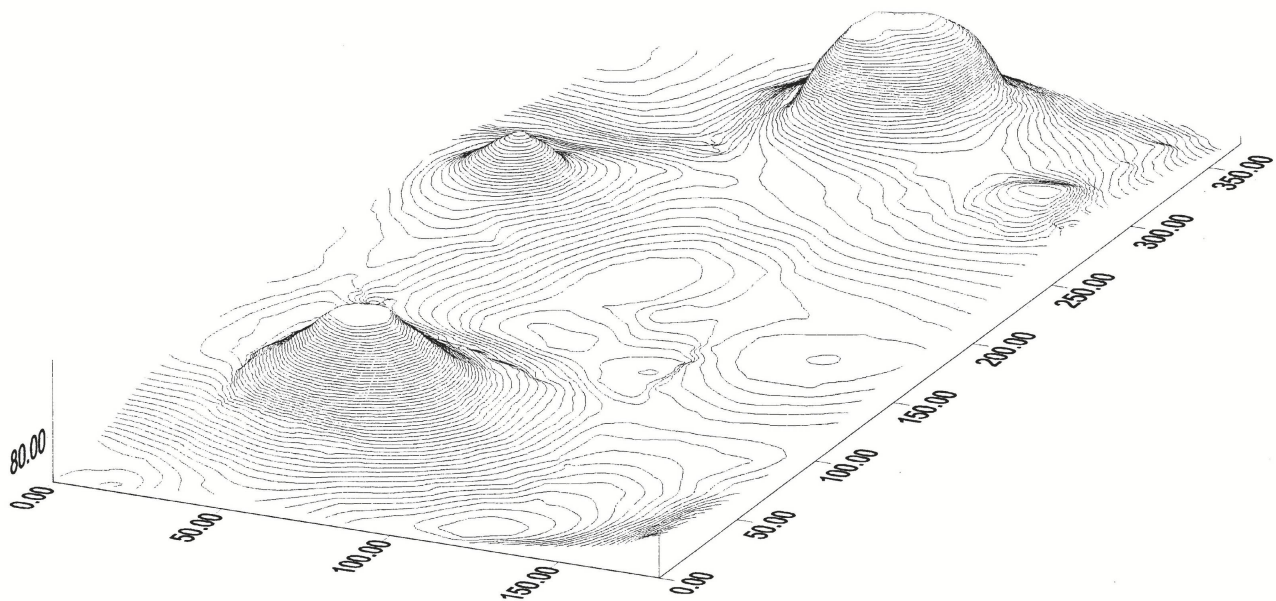


Fig. 3 The Lusehøj triad, Børge Rasmussen (after Thrane 1984).

report sent to the king gave only the barest facts of the excavation. Langkilde's trench was still recognizable when we re-excavated the barrow in 1973-75. Having emptied the cist, he evidently continued for a few metres but never reached the centre (Thrane 1984: 100f).

The 1862 cist was never taken as seriously as it should have been, considering that it was the richest Late Bronze Age burial in all Scandinavia. The imported bronze urn with its original amber-covered lid contained gold ornaments and a bronze axe and razors. Recent strontium analysis (Bergfjord et al. 2012) gives promising results for the textile in fine linen technique from this tomb. It cannot have grown in Denmark, which is not really surprising after all, but I am sure can make Kristiansen and others speculate on the significance of this new datum from an old find.

The earlier simple acceptance of the nettle cloth as local may be seen as a typical case of inertia, a plain inability to recognize the special role of textiles in long distance relations. For the ancient spectators the uniqueness of this linen textile would no doubt have been immediately recognized and its wearer's position thereby enhanced. Let it serve as a salutary reminder of how easy it is to stick to old notions.

More surprising is the strontium contents of the wool cloth. One would expect all Danish wool textiles to be of native origin. That is not the case here, though (Mannering et al. this volume).

All the more pity that the bones were not kept, so that we cannot know whether the deceased himself was also foreign.

Bohøj

Back in the nineteenth century there was much more focus on the neighbouring mound 'Bohøj'. Crown Prince Frederik called it 'King Boes Mound' and had a go at it in 1845 when he found a grave (A) with bronze ornaments. He paid for 334 man days, using six to 24 men per day, so it must have been a substantial excavation (Thrane in press). The ornaments are lost and were not described, so we cannot date them. The importance of this mound is indicated by the fact that Frederik presented no less than two silver beakers to the owner. Normally he gave just one to the local farmers who had assisted him one way or the other.

Langkilde made Bohøj his principal effort in 1863, paid by the king and presumably encouraged by him, and he was sorely disappointed when the expected rich grave did not turn up. He actually continued his digging into the subsoil which must have been a challenge, considering the height of the mound which Langkilde estimated to be more than seven metres. Finally he found a stone cist 6 x 2 Alen (c. 3.5 m x 1.3 m) 1 m below the 'natural bottom', but, alas, it contained no more than a skull, two pieces of antler and a flint point, the latter being a nice but by no means ostentatious dagger. Having removed the burial chamber from the Bronze Age (meaning the stone cist), he continued a further two metres down but found nothing (Thrane in press).

We cannot now reconstruct the relationship of this tomb to the great mound, but it seems unlikely that the Late Neolithic/Early Bronze Age cist could have had a covering mound as big as that of the Bohøj that we know. A recently excavated mega mound at Tårup in south-east Jutland has an indirect date to this period, however, so perhaps the possibility should not be excluded (Holst 2006). This raises new problems which I do not intend to face here, however.

We know of one urn burial from Bohøj (grave B) from Period IV and 11 bronzes plus a glass bead were delivered to the Royal Collection in 1861. They were found by the farmer and represent at least three, probably more likely five, different cremations dating from Periods IV and VI. None of the finds are extraordinary, so presumably they were secondary to the mound or represent a sequence similar to Lusehøj's. It would surprise me if they were the only LBA burials in Bohøj.

Having dug Lusehøj we wanted to know in what state Langkilde had left Bohøj. We therefore made a proper survey of the mound and its surroundings in 1976 (Thrane 1984, fig.12). That was no easy task because of the dense plantation of fir trees covering the flat, but somewhat irregular, top. The trees impeded the sight lines of the theodolite. The present plan is obviously the result of agrarian laziness, the original circular structure is, nonetheless, evident. The plan shows steep sides, especially in the north where the then owner had taken material for filling a bog. The more gradual slope in the south-east could indicate that this was where Langkilde had dug his trench towards the centre.

We dug several small trenches on the top, but in spite of the readiness of the owner, the widow from Bohøjgård, we felt reluctant to fell too many trees so we had to restrict ourselves to small trenches. Everywhere the fill was the same – mixed brown - grey with grey spots down to a depth of 1.7 m. We interpreted this as re-deposited disturbed mound fill (Thrane 2004: 82ff). A layer of iron pan on the original field surface indicates that Bohøj – like Lusehøj – had a wet core. Thus it seemed that the barrow had been so thoroughly excavated that the whole original mound had been destroyed and levelled to its present state.

In the north-east it was possible, nonetheless, to find a small bit of undisturbed mound (Fig. 4) with recognizable turf structures. It remained to a height of 2.3 m. Therefore at least a shell remains, while the core of the mound has been dug through. Langkilde presumably expanded his trench to include most of the centre, and seeing that the fill of Bohøj is sand, he must have made a wide opening at the top in order to reach the subsoil without landslides.

I am now inclined to see Bohøj's original extent as rather like the present. The top would have been convex and the sides less steep, but a diameter of c. 60 m and a height of more than c. 7 m seems a reasonable guess. The reduction of the western and northern perimeter may mean that 70 m may be a more correct diameter. Bohøj's present appearance is fake. Our small trench at the north-west edge showed the Bronze Age surface c. 5 m above the present field surface, which has been cut away towards the west. In other words, Bohøj was placed on a natural hillock. The original top would have risen c. 5 m above the present top, making the mound much more impressive.

The only way to obtain more knowledge would be to dig some cuts into the edges of the mound, but that will be a job for my successors at the museum. Bohøj is now a protected monument. In spite of its maltreatment the remaining ruin deserves to be included in the Bronze Age ritual landscape round Lusehøj, forming a unique concentration of monumental expressions.

Buskehøj

While Bohøj has been destroyed or maltreated with precious little information as a result, its southern neighbour, called Buskehøj, remains virgin, so to speak. In 1861 it was characterized as the biggest mound of the Voldtofte area. In 1997 it was possible

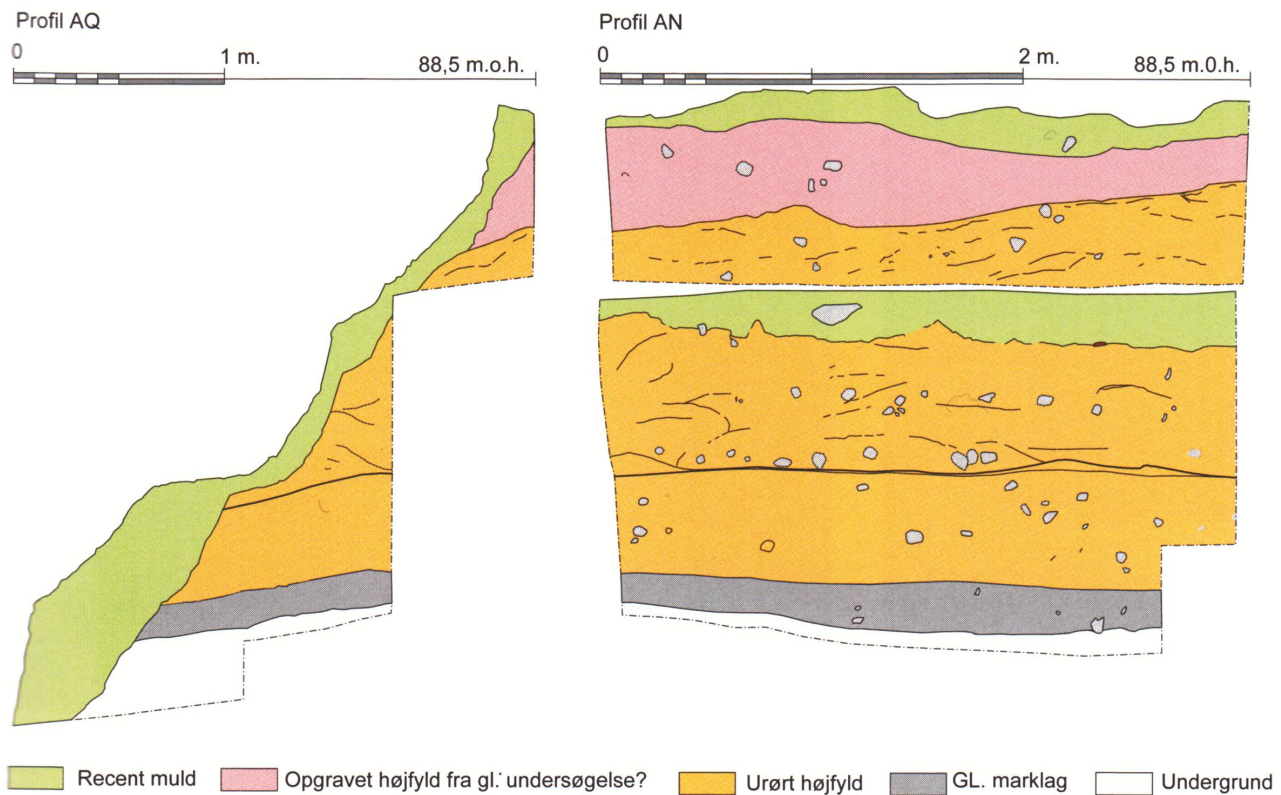


Fig. 4 The section in Bohøj, Claus Madsen (after Thrane 2004).

to sample the mound by auger drilling from the flat top with the team conducting the project on wet core barrows. The first attempt A was stopped by a 10 cm thick stone layer at a depth of 1.5 m. The fill was mixed grey – iron-spotted humus. Drilling B also hit a stone at 1.1 m but we were able to circumvent it only to be stopped by another bigger stone at 5.35 m. The fill was mainly brown – greyish brown, clayey and increasingly moist below 4 m.

A third drilling C was also stopped by a stone at 2.9 m depth. We had placed C in a hole that had been dug recently by boys following a windfall. Yellow subsoil material (layer 3) formed the bottom of this 0.75 m deep hole. We dug one metre further down and observed that this yellow layer was covered by white-yellow clayey sand with iron pan on top of 5 cm grey mixed fill (layers 1-2). Homogeneous humus covered the sequence. The subsoil layer contained stones up to small head size. Under it came 12 cm of mixed yellow brownish fill (layer 4), 10 cm of greyish brown fill (layer 5), 3 cm of yellow mixed gravelly soil (layer 6) - and 20 cm clayey grey-brown fill with thin diffuse iron pan layers, layer 7. Layers 8-9 were yellow and grey with more iron pan stripes. The whole sequence, including the yellow subsoil layer, must be artificially deposited, i.e. mound fill. Layer 3 could be the same layer that stopped the auger in our drill holes A-B. Thus Buskehøj consists of imported soils down to at least 5.35 m below the top.

If the stone that stopped drill B was not part of a construction in the mound we should have to assume that Buskehøj lies on a hump no less than 5 m high, which seems unlikely. Having ascertained the man-made character of the mound we stopped drilling. If more

information is to be obtained about the construction additional auger borings will be needed.

A flat ledge at the bottom has led Jens Bech to infer the existence of a perimeter wall similar to Hohøj (Bech 2003). In 2009 I made an 11 m long series of soundings with an iron spit on the northern edge of the mound without finding any trace of a stone construction. This ledge is a recent phenomenon. A magnetometer survey should be able to prove or disprove the idea once and for all.

Buskehøj has also been reduced somehow on the west and south sides, but is otherwise very well preserved because it must have been kept out of the agricultural activities at an early stage. A diameter of at least 70 m and a height of c. 9 m seems to be a good assessment.

Just south-east of Buskehøj a ploughed out barrow sb 64 looks rather insignificant, only 0.85 m fill remaining. Recent metal detector finds from 2010 include no less than eight gold toggles plus one of bronze, i.e. five pairs, a gold awl (no less gold than 155 g), a bronze razor, a knife and three socketed axes (Henriksen 2011), which should be added to previous finds of a chisel and similar knife (Thrane 2004: 85 pl. 23,25-26). This very curious collection of per. V objects expands the volume of precious ornaments etc. from this group of tumuli with an unexpected concentration in a decidedly non-megalomaniac monument – just to show us sceptical brainworkers that reality beats all learned speculation.

'Buskebanke' was dug for Frederik VII in 1861 and yielded a small stone cist with gold armlet (oath ring), pin and two more toggles. The concentration of gold objects from these two barrows surpasses that of Lusehøj with its half pound of gold (the exact weight of gold from Lusehøj tomb AM cannot be ascertained).

Augering in 1999 showed an earlier disturbance at the centre of the ploughed out mound but excavation produced a stone cist with per. III male bronzes. The problem is that the (sparse) information on its position does not fit with sb 64 – nor with sb 90. Even if caution must be observed, the new finds underline the remarkable wealth of this group of mounds – the triad and its auxiliaries. The deposition of gold is another way of demonstrating megalomania, like that expressed in mound building.

The Lusehøj tumulus triad is remarkable in a number of ways. Firstly, the close concentration of three such large or oversize mounds is noteworthy. Tumuli tend to cluster, when they do not form lines, and clusters of large mounds are known. We could name the Borum Eshøj group with no less than 40 barrows, Skrydstrup with Grønhøj (5.5 m x 30 m), one of the finest Danish groups: Dutterhøje in Odsherred with St. Maglehøj (6 m x 35 m) and Esterhøj amongst 33 others 70 m above sea level, all Bronze Age monuments. None of these groups contains more than one really big mound. Galgehøj, the excavated of the twin Slotsbjergby mounds with Bronze Age origin, only became a megamound in the Late Iron Age according to the excavators P.V. Glob and Harald Andersen (Glob 1967: 164ff). It is 50 m x 5 m, while its unexamined neighbour, Hashøj, is even bigger.

In the absence of total excavation the relative chronology of such mound groups is difficult to assess. It is relevant in many ways, however, whether a group was built within a short period of one or two generations or took a long time to develop. Unfortunately, for our triad the internal chronology remains hypothetical. Period IV is represented by the mini mounds under Lusehøj and by graves in Bohøj. Period V is, of course, the date of Lusehøj itself with the two richest burials from the Nordic Late Bronze Age, and Period VI is attested from Bohøj. More rich Period V gold and bronze work comes from the vanished mound sb 90, the out ploughed sb 64. The old finds (urn grave A) from the erased Kvindehøj east of Buskehøj could easily be of that date too, as well as the other lost finds - burials B-C – from Kvindehøj (Thrane 2004: 91).

Whatever the relative chronology of these three mounds may be, it is clear to me that they interrelate in a significant manner. Which of them may have been the primary mound must remain an open question. One could argue for a movement from north to south with Buskehøj as the climax. Bohøj would only have been visible from the south before Lusehøj and Buskehøj were constructed. Lusehøj looks strangely odd in this context, being the smaller – even in its original state.

Lusehøj sits on a slight hump and it is quite likely Bohøj and Buskehøj were also placed on natural elevations, although we have no way of determining how prominent they may have been. Kvindehøj is still a clearly visible hill, even if the mound itself has been removed.

Once there was a mound the area would have acquired a significance in the local lore and ritual which could be the *raison d'être* for the succeeding barrows.

The interplay with the less significant barrows like sb 90, 64 and Kvindehøj is another open question. No. 64 is certainly



Fig. 5 Buskehøj seen from the north-east. Photo: H. Tehran.

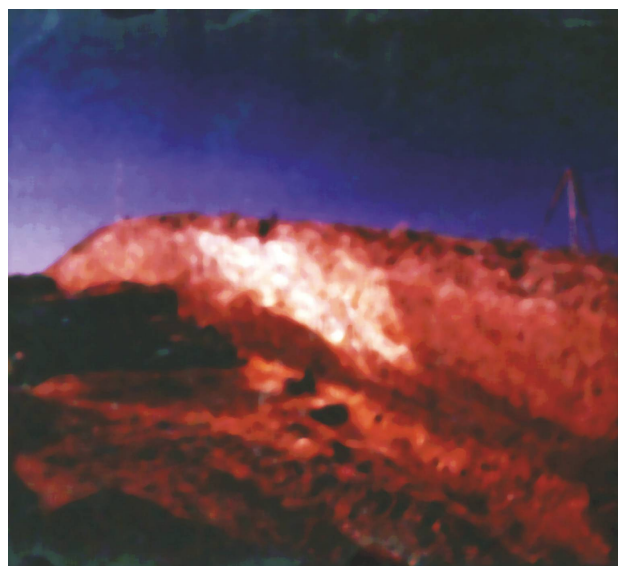


Fig. 6 Lusehøj: part of the section with turves heavily contaminated by subsoil materials. Today the mounds are best recognized in the open farming landscape by the trees on Bohøj and Buskehøj. The view from Kjørums church tower 6 km west of the mounds. Photo: H. Thrane

contemporary with Lusehøj 1862, both sharing gold toggles and socketed axes. They could commemorate less powerful members of the leading family or families which had chosen the site for reasons unknown and unknowable to us.

I will argue that the megamounds form a powerful complex which must be seen as a whole and which give a special significance for the ritual landscape of the Voldtofte centre. The triad is isolated from the mounds at the lower level 500 m to the south with Drengenhøj, Kirkehøj and Bondehøj and other mounds further east (Fig. 8 is taken west of Bondehøj). What the relationship between these barrow groups was is yet another open question. Some may have desired a thesis tying up these loose ends, but I don't quite see how that could become more than idle speculation.



Fig. 7 The view from Dreslette church tower 2 km south of the mounds; it is seen how the mounds are situated on the brink, blocking the view of the hinterland further north. Photo: H. Thrane.



Fig. 8 The triad as it now looks from south/south-west, from the main road. Lusehøj, being only half its original height, is barely visible in front of the tree group marking Bohøj in the background, with Buskehøj in the trees to the right. In its original state Lusehøj would have been more prominent. The ploughed barrow with the 8 gold toggles lies to the right of Buskehøj. Presumably the barrows were treeless in the Bronze Age. Photo: H. Thrane, July 2010.

Effects of megalomania

The megalomania found its poignant expression in the size and position of the mounds. They left a lasting imprint for posterity as the generations who have seen them and interpreted them (or misinterpreted them, as the case may have been) could testify. The megalomania found another more discrete expression in the expenditure of energy contained in each mound. We cannot

give any precise data for the sweat and kilojoules expended and blisters, sore backs etc. acquired during the construction. Suffice it to say that they must have been monumental efforts for a time when manual labour and only simple tools such as wooden spades, ox-drawn carts, bags and baskets were available. All efforts may be boiled down to the simple factor of manpower.

The mini mounds measuring 0.5 m x 5 m were made of plain humus and demanded only a few man days for the procurement of building materials including the stones for the protection of the urns and the, somewhat rudimentary, constructions. This effort was presumably no more demanding than the preparations for the funeral pyres of the 21 individuals who found their last material position in the four Lusehøj mini mounds. In other words the demands on the living family members were well within the bounds of ordinary farming families.

When a tumulus exceeds 20 m x 2.5 m the situation changes. Not only would the layout and the various construction elements demand planning and procurement of materials like stones and turves far exceeding the resources of a single farm, but the sheer size of the mound meant that so much grassland had to be stripped off its cover that demands of a different nature had to be honoured.

The easiest way to procure the turves for a given mound would be to cut them in the immediate surroundings, ideally within a circle radiating from the mound. According to Glob's (1967) calculation 2-3 hectares were needed for such a mound (Jacob-Friesen calculated a volume of 3.2 ha.). This idealized model would leave a curiously spotted landscape for some length of time. I tried to give a visual expression to this model (Thrane 1980). A large area of rough soil surrounding the mounds in an otherwise normal pastoral landscape with meadows and fields would be the result.

For a modern aesthete this may seem very odd, even shocking, and it certainly makes you think. What was the motivation for such a drastic re-modelling of the landscape? Was this kind of barren land – or barren in patches – the sacral landscape of the Bronze Age?

For Lusehøj it has been calculated (Thrane 1984: 206ff; cf. Berntsson 2005; Goldhahn 2007) that the mound contained 3200 m³ of turves which would have meant stripping the turves off a surface of 7.5 hectares +/- 1.5 – given the uncertain information about turf sizes and thicknesses – varying from 20 cm x 30 cm to 40 cm x 45 cm, 3-22 cm thick. Remember that Lusehøj is the smallest of the triad. . Hohøj, measuring 12 m x 72 m, has been estimated to contain sods from 20 hectares (Bech 2003; Stidsing 2005). Bohøj would have contained a lot more topsoil and probably needed more than 10 hectares of grass sods while Buskehøj would make even heavier demands on the environment. Taken together and disregarding the smaller neighbouring mounds, Kvindehøj, sb 64 and sb 90 these calculations would give a rough total of 15000 m³ arable soil and well over 30 hectares – 300,000 square metres for the turves of the triad. All these figures are highly speculative and more likely to be minimal.

In spite of all the uncertainties even the minimal figures are considerable and mean that the neighbourhood must have been seriously depleted of its production capacity for a period probably exceeding one generation. This is a serious effect of megalomania that damages the living conditions of the population.

A result may have been new dependencies for the people who previously depended upon the pasture from the hectares that now lay unproductive in the mounds. It is no wonder that some of the

sods in Lusehøj had more subsoil than humus, meaning that a second layer of grass and humus had been cut after the removal of the top layer.

The reader will now appreciate why the internal history of a mound group is important. If a mound were added each generation, the surrounding landscape may have had a chance of regenerating, whereas it would not have had this chance if several barrows were built within a short period. The latter scenario could have been the case at Lusehøj. If Bohøj was enlarged to its final size in Period IV, then Lusehøj could have followed some generations later, perhaps up to 100-200 years. By then the landscape could have recovered once more from the Bohøj effect so that sufficient turves could be cut. Remember, though, that the bottom was scraped as shown by the subsoil turves in Lusehøj mentioned above.

But what of Buskehøj? Here the scanty information points to a situation like Lusehøj, where subsoil sods had to be used. Whether this reflects a lack of time interval between Lusehøj and Buskehøj or simply the excessive demands of such a huge mound, I cannot decide. The lack of dating evidence for Buskehøj makes the whole argument a bit too speculative. Even with these reservations in mind, the Lusehøj triad would have created a sore wound in the landscape.

Important burials include the Kirkehøj, sb 90 + 64 and several other mounds which also belonged to Period V. We cannot know whether the burials in these mounds were primary or secondary but my guess is that the burials date the mounds, Period V being the most impressive period around Voldtofte. In my view Lusehøj would have been far from the only mound demanding turves, thus enhancing the impact of turf stripping in the Voldtofte area even further.

Other megamounds

The Tårup mound in south-east Jutland was surrounded by an extraordinary ditch, no less than 1.5m deep, giving the diameter of the mound as 57 m. The height remains uncertain as the mound had been thoroughly ploughed down. Its date is later than burials of the Late Neolithic/ beginning of the Bronze Age, i.e. a flint dagger similar to Bohøj's was present. Mads Holst assigns pottery from the ditch to the Early Bronze Age (Holst 2006). This mound was overlooked in much the same way as Buskehøj, being simply too large to be suspected as a prehistoric mound by modern short-sighted antiquarians.

Hohøj near Mariager in eastern Jutland is probably the largest Danish tumulus, measuring 12 m x 72 m. It may not be the biggest Nordic tumulus, as suggested by the excavator (Bech 2003; Stidsing 2005), as Raknehaugen in South Norway claims that, measuring 15 m x 95 m (Grieg 1941). Hohøj probably deserves the status of the biggest Danish Bronze Age barrow, however. In 1997 a 4 m wide trench was dug from the south 12 m into the mound and showed a remarkably massive and large, solid perimeter wall. Hohøj has an extraordinary 5 m wide horizontal ledge outside the 1.5 m tall stone perimeter wall, marking the base of the mound. Turves and heather from the mound have been AMS dated to 1430 and 1380 BC, i.e. Early Bronze Age in the Danish sense, contemporary with the oak coffins of Period II. Hohøj sits isolated on its hill with a great view over the region.

A similar position is held by unexcavated Tamdruphøj off Årøund in south-east Jutland.

The Lusehøj triad enjoys an equally impressive view across the bay of Helnæs and to Slesvig – with Tamdruphøj. The set up is clearly oriented towards the sea, while the view towards the north does not reach far. It was presumably blocked by a solid wall of forest no more than a few km further north, where the hills rise again with Pallehøj (no tumulus) and where no Bronze Age remains have been located.

Bech (2003) is only able to list a further seven barrows with diameters exceeding 50 m, what he calls giant mounds. Of course they make the top of the list, but where should the line be drawn against the other megamounds like Lusehøj and Borum Eshøj? Does it make sense to split the group at 50 m? Ringshøj in central Funen (9 x 49 m) and the Jutish Tåruphøj and Hohøj lie isolated. Ringshøj or Møllehøj remains undated but a Viking Age date has been suggested. Vendel-time Grydehøj at famous Lejre on Zealand measures 5 m x 36 m.

I have tried to present the Lusehøj triad of monumental burial mounds in a context that is different from the one normally applied to the Voldtofte phenomenon and Lusehøj. I have used the recently revised knowledge of the archaeology of Voldtofte presented in Danish in my latest book. Traditionally, we have concerned ourselves with the rich burials, the goldwork or the exotic or highly decorated bronzes, and we have done so with good reason. They are important aspects which present the Voldtofte area as an exception within the Nordic Bronze Age, even admitting the existence of rival centres like contemporary Albersdorf or Seddin or the earlier Håga (Thrane 1994 & 2006). I think that the megalomania aspects presented here add to and underline the position of Voldtofte with Lusehøj as a central element.

Why it should sometimes be considered necessary to construct these mega monuments remains a riddle. Whatever the reasons were, they must have been persuasive, but even with a close insight into the local societies we are far from a satisfactory understanding. No doubt relevant insights may be acquired through comparative studies of similar megalomaniac expressions in pre- and protohistory, but that would transgress the limits of this paper.

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MAKING HISTORY:

RITUAL VARIATION IN PRE-CHRISTIAN VIKING AGE REUSE OF BRONZE AGE MONUMENTS IN HALLAND, SOUTH-WESTERN SWEDEN

Tore Artelius †

Abstract: In recent decades the use of the past in the past has been a much discussed subject in archaeological research. This paper examines several examples of pre-Christian Viking Age reuse of ancient Bronze Age burial monuments in present day south-western Sweden. Excavations have shown that the large barrows, cairns and stone-settings of the period were used in a multitude of ways in the pre-Christian Viking-Age rituals. The documented behaviour was not a result of plundering. Trenches were dug, depositions made, meals prepared, bonfires lit and secondary burials conducted in the old monuments. The labour invested in the ritual reuse in the Viking Age was often quite extensive. The author argues that the Viking Age ritual reuse of the Bronze Age monuments expressed a social strategy that confirmed an ideology. In other words, through the repeated reuse of Bronze Age monuments a Viking Age population could create a history, express their identity in relation to a past and assert social claims to a certain area.

Keywords: Viking Age, Bronze Age, mounds, burials, graves, re-use

Introduction to a perspective on a Viking Age pattern of reuse

A prerequisite for this reflection on pre-Christian Viking Age reuse of Bronze Age burial monuments within the county of Halland, in present day south-western Sweden, in the ninth and tenth centuries AD is that we deem it possible to study complex religious ideas in archaeology. Scientists, within as well as outside the field of archaeology, have been sceptical of such a possibility. However, the development of a contextual approach in archaeology has provided us with constructive methods for studying the functions of religious ideas from starting points similar to those used in disciplines primarily concerned with social systems. The level of abstraction is not by definition more complex when it comes to the projection of religious ideas than is the case with social, political or economic structures. Even so, it is undoubtedly a fact that we can never fully grasp the relationship between the symbolic universe that is described in myths and the reality in which people lived. At the end of the day, all answers depend on the perspective from which our questions are raised. A study of concrete projections of religious concepts becomes possible when archaeological remains of ideas are interpreted from a perspective that stresses that religious meaning in the past was expressed through structured ritual action and the material composition of symbols.

A discussion of theories and perspectives concerning the very nature of 'The past', and also how this past was used in the past, has long been a major subject in sciences such as anthropology, psychology, sociology and religion. In the social sciences, the very definitions of such key concepts as 'ritual', 'memorization', 'collective memories', 'anamnesis', 'cult', 'ancestors' and even 'history', tell us something about how humanity, in many ways and for varying strategic reasons, has related to - and also used ideas about - the past (e.g. Borgeaud 1987; Zuesse 1987; Connerton 1989; Burke 1989; Halbwachs 1992; Rappaport 1999). Of course, archaeology is no exception in this sense. Not only do we investigate the past, but our discipline itself also determines the identity of the past and in that sense creates a 'history'. In our

discipline, though, reflections upon the actual use of the past in the past is of a more recent date than in the social sciences and is also characterized by the traditional limits that are always set up in material culture. But the question of whether it is possible to grasp a 'meaning' in prehistoric material culture that tells us something about how humanity in a long gone past reflected upon the past has become a topic in archaeology. In other words, raising questions concerning the use of the past in the past has become something of a trend in the line of research that deals with notions like memory-making and ritual change (e.g. Gosden & Lock 1998; Olivier 1999; Edmonds 1999; Bradley 2002).

It is a fact that ideas concerning a distant, as well as a more recent, past are essential parts of a community in the sense that they are vital ingredients in a collective recognition of a common history and comprehension of a collective memory (Connerton 1989). In the contextual tradition one of the most concrete directions in research that deals with the use of the past concerns the ritual reuse of burial monuments in different periods. There are several diverse studies with a pronounced theoretical perspective which have examined the use of the past in the past in the Bronze and Iron Age burial traditions of south-western Scandinavia. At the same time, there has also been a very distinct focus on secondary burial as the principal form of monument reuse worth investigating. Apart from a handful studies, like Jennbert (1993), Hållans Stenholm (2006) and Thäte (2007), where a more holistic approach to questions concerning the meaning of monument reuse has been applied, other categories of monument reuse have not been considered to the same extent. Of course, the identification of reuse of 'ancient' monuments is no novelty in Scandinavian archaeology, where the Bronze Age and Iron Age are focal points. The reuse of monuments for secondary burial in the Viking Age has long been a well known phenomenon in Scandinavia. Anne Pedersen (2006) has remarked that the Viking Age tradition of monument reuse was well documented in Denmark long ago. She describes examples that date back to the middle of the nineteenth century and the situation was almost the same in nineteenth-century Sweden. In her thesis, Eva Thäte (2007) described how secondary burial was often highlighted in older Scandinavian



Fig. 1 The counties of Halland, Västergötland and Bohuslän in south-western Sweden.

archaeological research. Thäte and Pedersen were both observing that the Viking Age tradition of conducting secondary burials in monuments was regarded by archaeologists as an common trait in the overall burial tradition of the period. In fact, the tradition of secondary burials was such a distinct and common trait that it actually distinguished the Viking Age tradition from other periods. In the theoretical sense, though, reuse in the form of secondary burial was regarded as a rather unproblematic issue in the older Scandinavian research tradition. The custom was clearly observed, but questions concerning the meaning and function of this reuse were not discussed within the more process-related research tradition (Thäte 2007).

Having already mentioned that the custom to conduct secondary burials in older monuments was a common trait in the pre-Christian Viking Age religious tradition, I want to shift the focus to other categories of reuse of ancient monuments. My purpose is to underline that the tradition of conducting secondary burials in older monuments was just one of the expressions of ritual reuse that existed in the pre-Christian Viking Age religious tradition. Reuse

of old monuments was carried out in a variety of different ways, and if we are to gain a more holistic picture of the complexity that was connected to the Viking Age ritual reuse of the past, and also express a little more concerning the 'meaning' of this reuse, it is constructive to describe the different categories of reuse. So, the question raised is not whether there existed a tradition to use the past in the pre-Christian Viking Age, it was how, and subsequently also why, it was of such importance to relate to a long gone past in a very concrete sense, i.e. in rituals. How are we able to interpret the 'meaning' concealed in the social and religious functions that were expressed in the reuse of ancient monuments during the ninth and tenth centuries? To answer these questions, one needs to study them from the perspective of religious function, i.e. taking the sciences of religion and psychology together. From a contextual standpoint we can understand something about the religious function that was ascribed and related to the concrete use of ancient monuments in a pre-Christian Viking Age social and religious context. The formation of the material record tells us something vital about the purposes concealed in the ritual actions performed.

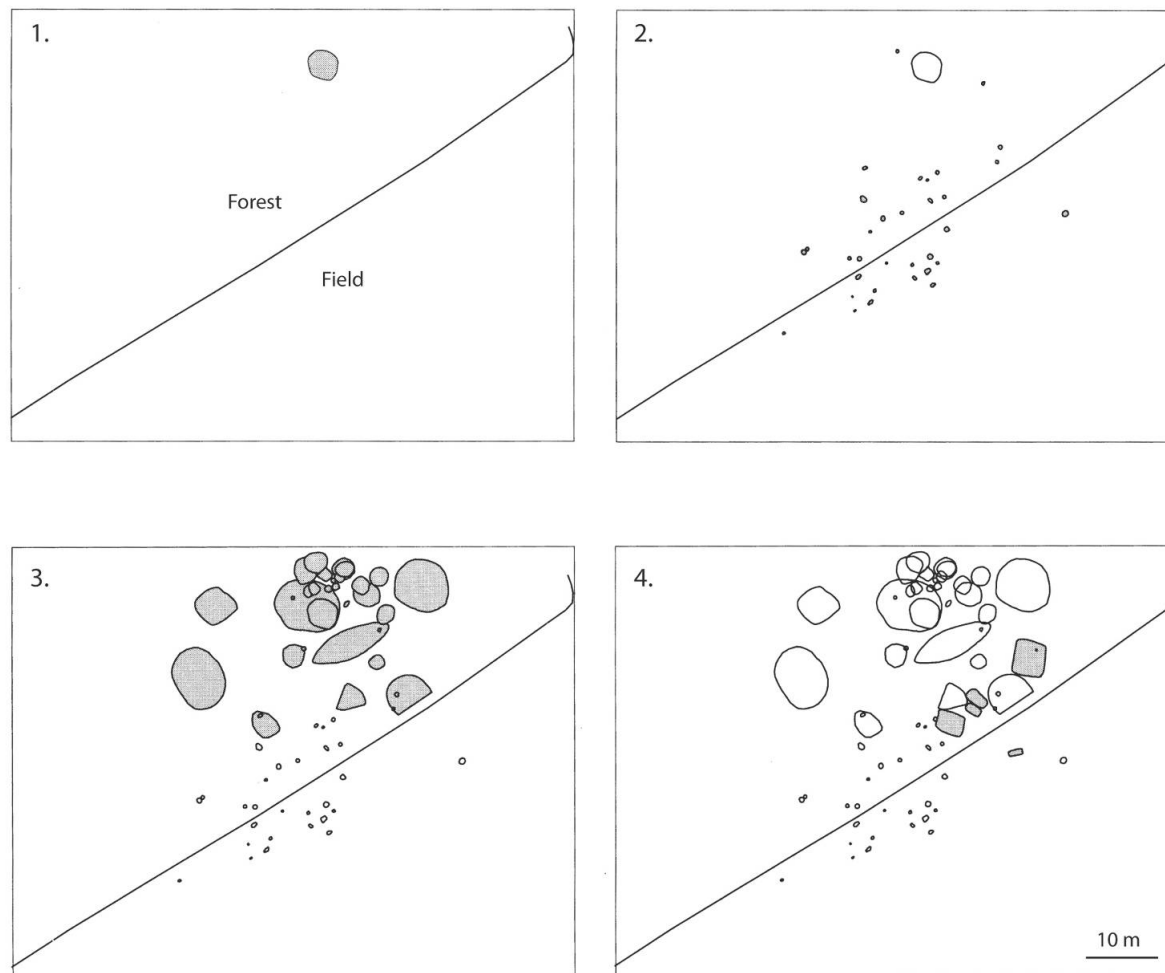


Fig. 2 Chronological development at the burial ground at Vittene in Västergötland. In the primary phase (1) a single large stone-setting was built in the Bronze Age. In the pre-Roman Iron Age approximately 30 burials were located in close relation to the old stone-setting. In the second century AD the burial ground was abandoned. In the eighth century AD the burial ground started to be reused. Several mounds and a ship-setting were built (3). In the last phase Christian inhumation burials were placed in stone-settings (4). Artelius & Lindqvist 2007.

From the written sources and sagas we understand that the pre-Christian Viking Age people of Scandinavia were very concrete in their religious cult. This is true in the sense that the content of myths became manifested through ritual action in burials, offerings and feasts. There has also long been a consensus among scholars from a variety of disciplines regarding Viking Age religion and the relationship between religion and its practice. In 1967 Folke Ström already emphasized that the Viking Age concept of religion was very concrete in the sense that the practice was central to, and perhaps even synonymous with, the concept of religion itself. In pre-Christian Viking Age Scandinavia the functional aspects of religion were emphasized in all collective rituals. For that reason a pre-Christian religion of the Viking Age can in many ways be described as almost synonymous with its practice. In that way religion in the Viking Age was essentially equal with the rituals. That this was the case can indirectly be supported by the fact that, in the pre-Christian Viking Age world, no words existed to adequately express a more theological concept of what a religion actually is. The term mentioned in the written sources which most

closely resembles our understanding of the concept of religion is 'The old ways' (Ström 1967).

From the above it is apparent that if we are to obtain the slightest understanding of the religious and social content once held in conceptions regarding the past it is necessary to identify *how* monuments were reused in different ways.

In this paper, though, it is not the intention to go any further into a more theoretical discussion concerning the nature of collective memories or how processes of memorization work in relation to an active use of the past (Borgeaud 1987; Rappaport 1999). It is a far too great a subject to address. Instead, I refer to previously published studies concerning Viking Age reuse of burial-grounds and monuments, where a more elaborate discussion concerning the 'meaning' of the cultural pattern of reuse has also been presented (Jennbert 1993; Artelius 2004a; Hållans Stenholm 2006; Pedersen 2006; Artelius & Lindqvist 2007; Thäte 2007; Artelius 2010). However, after a presentation of examples of pre-Christian Viking Age reuse of Bronze Age barrows and stone-settings in Halland,

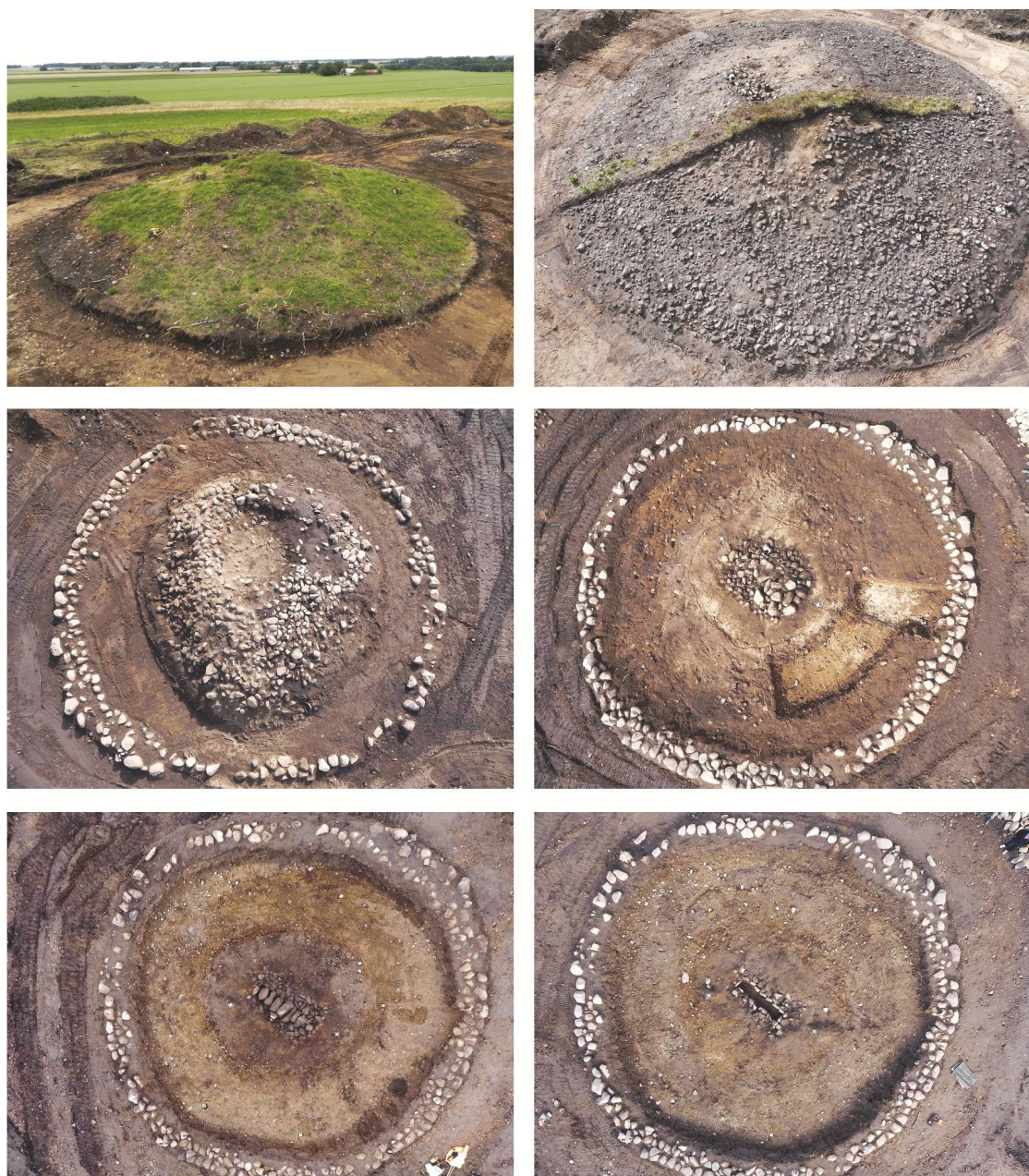


Fig. 3 The typically large barrows of the Bronze Age are most often situated in rows along ridges. The monument in the picture is Tackhöj, a recently excavated barrow in southern Halland. The monument exceeded 25 metres in diameter and was three and a half metres high. The photo sequence shows the internal features of the barrow. Photo: Robert Ullmann.

I will return briefly to the subject of functional ‘meaning’. For a number of social, religious as well as political reasons, the old Bronze Age monuments were an important component in the expression of social identities, strategies and religious traditions in eighth and ninth centuries AD. The overall ambition was, as always in ritual, to maintain and underline a reality that was described in the myths and the symbolic universe.

Regional variation in pre-Christian Viking Age reuse of ‘ancient’ monuments

Many archaeological excavations, as well as research and evaluations of reports, have revealed that a general cult of ancestors and the past evolved in the eighth century AD, and that

this existed on a rather wide geographical scale within southern Scandinavia (Artelius 2004a; Hållans Stenholm 2006; Pedersen 2006; Artelius & Lindqvist 2007; Lindqvist 2010). In certain areas, like the county of Västergötland, the ritualized reuse of older burial grounds and monuments in the ninth and tenth centuries AD became so extensive that we can claim that it was an important trait in the religious tradition in those parts of Scandinavia. From the archaeological record it is also obvious that the Viking Age reuse of ancient monuments appeared in different manners and contexts within southern Scandinavia. In south-western Sweden, in the county Halland, there is evidence from several excavated burial grounds and single monuments that indicate that one obvious focus for this Viking Age cult of the past was expressed in the active ritual reuse of the large Bronze Age burial monuments

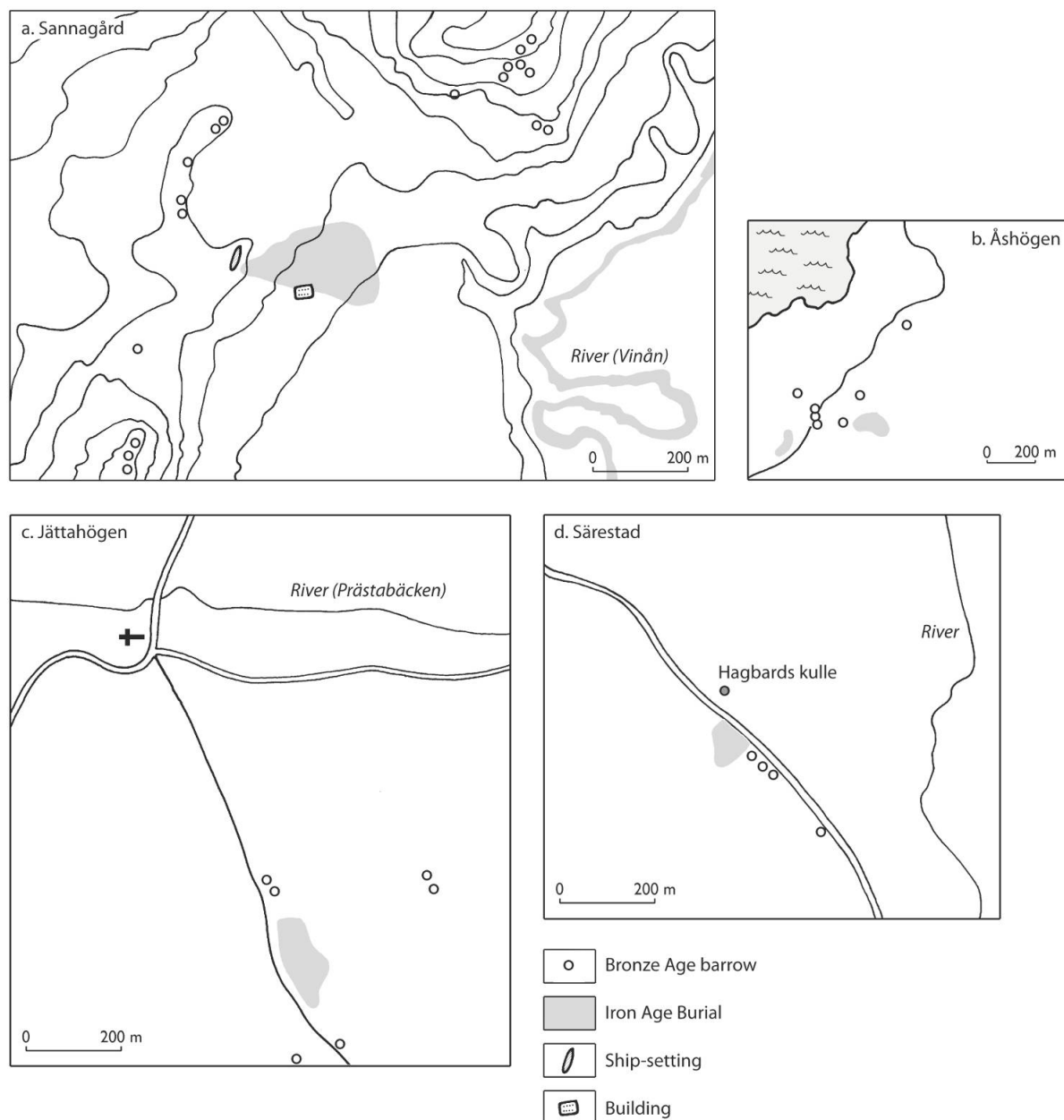


Fig. 4 Spatial relationship between Bronze Age barrows and Viking Age burial grounds in Halland. Circles indicate Bronze Age barrows and grey areas are Viking Age burial grounds. Artelius & Lindqvist 2007.

that are characteristic for that region. In Halland it is obvious that the typically large barrows and stone-settings dating to the Bronze Age were used extensively in a number of different ways in the Viking Age rituals (Olson 1968, Artelius 1999, Artelius 2004b; Strömberg 2005). However, identifying the ritual reuse of Bronze Age monuments in the Viking Age is not news to archaeology. There are many examples of Viking Age reuse of Bronze Age barrows from other parts of southern Scandinavia. As already mentioned, in a study concerning Viking Age reuse of monuments from earlier periods in present-day Denmark, Anne Pedersen presents 35 examples where Viking Age burials had been conducted in by then quite ancient monuments (Pedersen 2006). But, as stated above, the pre-Christian Viking Age reuse of old burial-grounds took many shapes and the documented ritual behaviour was obviously also characterized by many variations. Subsequently, the reuse therefore also appears in many different ways in excavations and excavation reports (Lindqvist 2010). For

instance it is evident that an extensive reuse of urn-field burial grounds dating to the pre-Roman period, places that in the Viking Age had been abandoned for seven centuries, is characteristic in the ritual tradition within the county of Västergötland from the eighth century AD and onwards. The 'ancient' pre-Roman burial grounds became re-colonized in the Viking Age in the sense that the population started to use places for burial that by then had been abandoned for approximately 25 generations of farmers. In many places Viking Age burial grounds were established in a very close spatial relationship to the older urn-fields. The reuse of these places indicates that, in ritual behaviour, the Viking Age farmers emphasized a concrete connection with a population that inhabited Västergötland almost a thousand years earlier. Viking Age graves were built in direct contact with older monuments, ancient objects and cremated human remains dating back to the pre-Roman Iron Age were collected and moved around in the burial grounds. New monuments were constructed around



Fig. 5 The stone-setting at Stråvalla was originally constructed in period II-III. Artelius 2004b.

older graves and the new graves were connected with the older ones through the laying out of strings of stones (Artelius 2004a; Artelius & Lindqvist 2007; Lindqvist 2010). Recently, in an article that examines the reuse of monuments from the Bronze Age in the county of Bohuslän, Mats Lindqvist presented more than 20 examples of such reuse dating to the Viking Age. In his analysis Lindqvist concluded that this ritual behaviour was not only related to large and monumental graves. From the evidence in Bohuslän it is evident that there were also more subtle monument categories, such as small, shallow, almost invisible and often quite irregularly formed, stone-settings, which were also reused in the Viking Age. His examples thus convincingly demonstrate that the tradition of reuse must have been regarded as quite an important feature of the ritual manifestations in that in order to locate and reuse diminutive stone-settings the population must have actively sought them in the landscape in a very thorough manner (Lindqvist 2010).

Examples of a varying tradition of reuse of older monuments in the Viking Age can be archaeologically identified in almost all regions in present day southern Sweden. When it comes to the reuse of monuments from the Bronze Age, there are examples from regions that were geographically far apart one thousand years ago. The geographical spread of ritual reuse of older monuments in southern Sweden indicates that the tradition was widespread in pre-Christian Viking Age society and thinking. In my opinion, the examples of Viking Age reuse of monuments from older periods make it possible to assert that the repeated and often carefully organized ritual behaviour can be looked upon as evidence of a pattern that was a central feature within the Viking Age religious tradition (examples: Nagy 1976; Rudbeck 1978; Hemmendorff 1980; Fernholm 1982; Hansson 1991).

Examples of pre-Christian Viking Age reuse in Halland

In the county of Halland the characteristic burial monuments of the Bronze Age generally fall into three different categories.

There are the often monumental barrows built of turf, soil or sand that are very characteristic landmarks in the southern parts of the county. The diameter of the barrows often exceeds 20 metres. Externally, the large barrows are very much of the same type of construction that also appears in Jutland and the Danish isles. The similarly fairly large cairns, which are monuments built entirely of thousands of stones, form the second category. The cairns are mainly found in the northern part of the region and in the forested inland, and then further north throughout Scandinavia. The third kind of monument comprises the shallow and often almost invisible stone-settings that are typical in the coastal region close to the sea. All three categories of monuments can contain multiple burials, and chronologically the entire Bronze Age is covered by the monuments. Quite often the large barrows in the southern part of Halland have also been used for secondary burials in the pre-Roman Iron Age, which means that the monuments can contain burials that stretch over a period of nearly two thousand years. However, the barrows were not used for secondary burials in the Roman Iron Age and during the Migration period. The barrows and cairns are often clearly visible in the landscape and when it comes to the barrows they are situated in rows along the ridges in the landscape (Lundborg 1972, 2007).

Pre-Christian Viking Age reuse has most often been documented in relation to barrows and stone-settings. There are almost no documented examples of reuse in relation to cairns. One possible explanation for this is that the cairns are mainly situated in the inland region, in a part of the landscape that was almost uninhabited in Halland in the Viking Age. In order to understand something about the quantitative extent of the Viking Age reuse of barrows and stone-settings, it can be worthwhile to note that the reuse often appears in a very subtle way in the archaeological material and reports. In older reports that describe results from excavations of burial grounds and monuments from periods prior to the Late Iron Age it is frequently simply noted that a certain construction in a burial ground, or for that matter a single



Fig. 6 The stone-setting at Stråvalla. The whole southern part of the monument had been removed in the Viking Age. Artelius 2004b.

¹⁴C-analysis from a layer within a monument, dated to the Viking Age (Lindqvist 2010). The circumstances indicate that the reuse of monuments was much more elaborate and extensive than we have assumed it to be. From the examples below it is also obvious that the amount of labour that was invested in the reuse was quite extensive.

Stråvalla

Fifteen years ago a large, shallow and irregularly formed stone-setting from the Bronze Age was excavated on the cliffs close to the sea at Stråvalla in the northern part of Halland. The monument exceeded 20 metres in diameter and was constructed directly on the naturally arched rock surface in a manner that made it quite monumental from a horizontal perspective. The large monument had originally been built in period II and two graves were documented. The primary grave consisted of an approximately 3 metre long ship-formed stone-setting constructed of larger boulders that was constructed directly on top of a narrow natural crack in the surface of the rock. The crack contained the cremated remains of an adult but no other artefacts were found. A secondary cremation grave was situated in the eastern part of the monument. Traces of a cremation pyre were also discovered under the northern part of the stone-setting.

Under the dense packing of stones in the southern part of the monument was a homogenous approximately two centimetre thick charcoal layer spread over an area of approximately 15 m². The dating of radiocarbon samples from the layer revealed that it dated to the late Viking Age. The circumstances reveal that a very large part of the original stone-setting had been removed sometime in the late Viking Age. A large fire had been lit in very direct relation to the ancient grave in the centre of the monument. Afterwards the whole original layer of packed stones was put back in place with extreme care, almost without impacting the archaeological record, i.e. in a way that showed almost no signs of any deliberate disturbance. Burnt bones from animals were documented in the layer, thus indicating that the killing, and possibly also in the consumption, of meat had been an essential element in the ritual that took place at the ancient monument (Artelius 2004b).

Tom

A pit filled with charcoal and burnt bones from pigs and sheep was found under a large stone slab. The slab was included in one of the inner curbs of stones that were discovered at the bottom of a large monument from period III. The large stone-setting was excavated in 1966 at Tom in northern Halland. The monument was approximately 18 metres wide and more than 1.2 metres high.



Fig. 7 Bronze Age monument at Tom in northern Halland during excavation in 1966. The large stone covering the pit dating to the Viking Age is indicated (O). Photo: Gösta Olson.

The analysis of charcoal revealed that the pit underneath the large slab in the curb had been dug in the Viking Age (Olson 1968). A massive amount of labour had been invested in the by then approximately 2,000 year-old monument. A very large part of the covering stone-setting had been removed. A couple of stones in the inner curb had also been removed and the evidence indicated that some kind of ritual meal had been prepared in the pit. Afterwards a large stone has been put on the spot to cover the pit. All of the original covering stone-material had been put back in place.

Värö

In 1995 a Bronze Age barrow dating to period IV – ‘The Kings Mound’ – was excavated at Värö in the central part of Halland. The monument was approximately 14 metres wide and 2 metres high, and it showed several traces of secondary ritual activities. The primary grave was representative for the burial tradition that developed during the course of period III and IV in the region. Although the primary grave consisted of a deposition of cremated human remains many traits in the organization of the burial contained influences from the older inhumation tradition. The inhumation was abandoned as the primary burial tradition during the course of period III in this part of southern Scandinavia. The monument contained at least the remains of two centrally located burials from the Bronze Age. In both burials the cremated remains had been placed on large stone slabs. The second burial had been double in the sense that two adults, a man and a woman, had been buried together. From the artefacts it is reasonable to suppose that the burials took place in period IV.

The barrow had been dug into on several occasions. In the middle of the barrow a circular shaft had been dug all the way down to the

stone slabs and the primary burials. Cremated human remains had obviously been collected and the objects that were displayed in the Bronze Age ritual had been moved. A secondary burial in the form of an urn containing cremated human remains was documented from the top of the barrow. It was placed on the side and very top of the circular shaft that had been dug through the barrow, and consequently the urn must have been placed in its position after the deep shaft had been filled up again. The urn contained the remains of a young adult that had been buried in the Early Iron Age. However, the large trench in the middle of the barrow had been dug much later than that. From stratigraphy and the dating of radiocarbon samples it is evident that the shaft had been dug into the interior of the mound sometime in the late Viking Age. Scattered remains of burnt animal bones were found at the bottom of the shaft, thus indicating that remains from a ritual meal had been deposited in the old grave. It is noteworthy to mention that the valuable artefacts belonging to the Bronze Age burials had not been taken away from the grave. The objects deposited in period IV all remained in the grave. The shaft was therefore not a sign of a traditional plundering of an old monument. The careful handling of the urn from the Early Iron Age that had been put back in the top of the barrow also tells us that the digging in the monument had been conducted in a most cautious way (Artelius 1999).

Pre-Christian Viking Age history-makers

As already mentioned, a pre-Christian Viking Age pattern of ritual reuse of burial monuments in southern Scandinavia was characterized by regional variations. The archaeological material suggests that the tradition of ritual reuse significantly varied in form within south-western Sweden. Chronologically, a tradition of reuse seems to appear simultaneously in the different regions

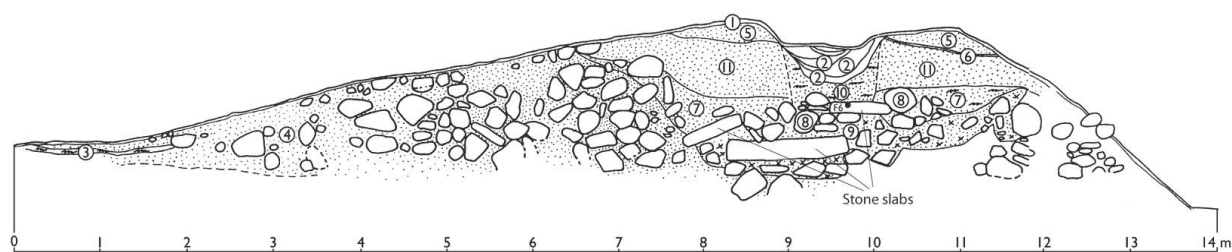


Fig. 8 Profile through 'The Kings Mound' in Värö. A deep shaft was dug into the barrow all the way down to the primary grave.
Artelius 1999.



Fig. 9 Miniature sword, button and razor from the 'The Kings Mound' in Värö. Artelius 1999.

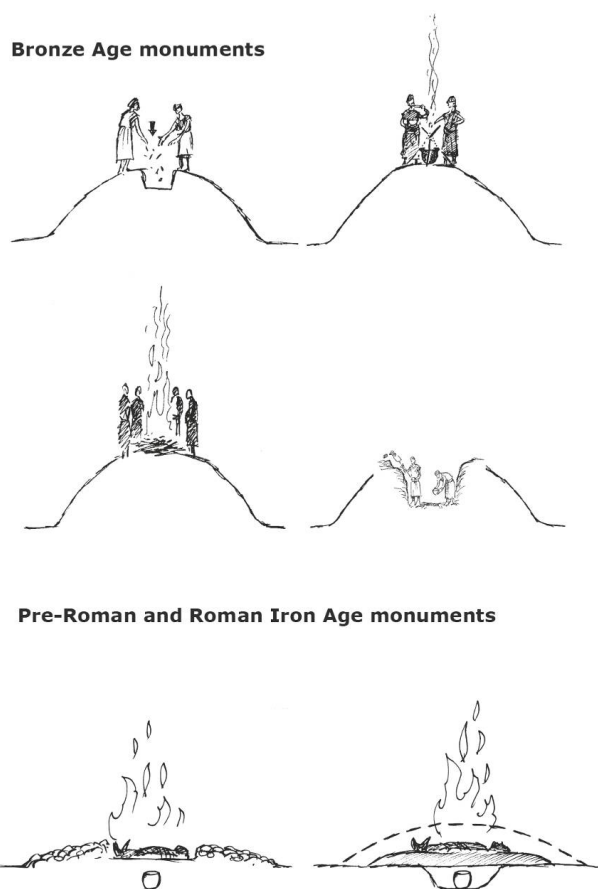


Fig.10 Schematic illustration of the Viking Age reuse of Bronze Age barrows in Halland. Artelius & Lindqvist 2007.

during the course of the eighth century. It also seems as if the tradition intensified in the ninth and tenth centuries. Although there was variation in form, it is in my opinion reasonable to assume that the tradition of reuse in the districts of southern Sweden had a similar ideological content. Whether the reuse mainly concerned Bronze Age monuments like in Halland, or focused on reuse of pre-Roman Iron Age burial grounds as in Västergötland, the religious/social behaviour aimed to function as a ritual arena where the organization of pre-Christian Viking Age society could be strengthened and confirmed. By creating a concrete link to ancestors a certain place in history could also be claimed. Through the very active ritual reuse of older graves it is probable that even judicial rights could be expressed in relation to a given space and place (Andersson 2005).

From the examples above it is evident that the labour invested in the reuse of Bronze Age monuments in Halland was in some cases most extensive. In Stråvalla the labour invested in the re-building of a Bronze Age stone-setting almost exceeded the labour that was originally invested in the actual construction of the monument (Artelius 2004b). To acknowledge such a fact tells us something about the importance that was manifested in this very distinctive pre-Christian Viking Age ritual behaviour. As presented in the examples, the pre-Christian Viking Age reuse of Bronze Age monuments in Halland also appears in forms other than clear signs of secondary burial. The archaeological record from Halland reveals that the late Iron Age reuse of Bronze Age monuments can also be divided into the category of repeated

variations in ritual behaviour. The first and most obvious reuse is the one already mentioned: Viking Age burials were sometimes established in direct relation to the graves in much older Bronze Age monuments.

The second variation in the reuse of the Bronze Age monuments in Halland can be described as the ritual digging of large trenches and shafts in the barrows. From northern Halland there are examples of large shafts that had been dug into the monuments. In other examples the archaeological context indicates that significant parts of the original monuments must have been removed in the Viking Age. In some cases subtle traces of what can be interpreted as secondary burials have been discovered in the trenches, but it is not possible to give a more precise interpretation when it comes to the actual purpose of the digging of trenches and shafts. From the material, though, it is not possible to view the trenches and shafts simply as traces of plundering. In Värö the shaft had been carefully sealed and the objects found had been re-deposited. It is fair to assume that the digging of shafts and trenches is simply a sign of deliberate searching for cremated remains of ancestors and objects: remains and objects that could be used in a cult of the past.

Ritual feasting constitutes the third variation in ritual reuse behaviour at Bronze Age monuments. In a couple of examples animal bones have been discovered at the bottom of pits dug into Bronze Age monuments during the Viking Age. ¹⁴C-datings reveal that in some cases the pits were dug in the Viking Age, thus indicating that an extensive effort had been undertaken in order to deposit the remnants of a ritual meal at the very bottom of an ancient monument. This suggests that ritual meals were an important element in the pre-Christian Viking Age tradition.

Large bonfires form a fourth example of Viking Age ritual reuse of Bronze Age monuments. There is archaeological evidence that suggests that large fires were lit inside, as well as on top, of the Bronze Age monuments in the Viking Age. In one of the examples above it seems that a very large part of a huge stone-setting had been removed in order to light a fire. This occurred within close proximity to the primary grave in the Bronze Age monument.

The archaeological evidence also makes it reasonably clear that certain objects, presumably ones that in the Bronze Age had originally been deposited in relation to burials, have been moved around and sometimes deposited elsewhere in the monument during the pre-Christian Viking Age rituals. Even with just a few examples it is reasonable to assume that ancient urns with cremated remains in the Viking Age were relocated within the monuments.

To a pre-Christian Viking Age population in Halland the large barrows and cairns probably served as very concrete reminders of a past and of a constant ancestral presence in the landscape. In my interpretation the Viking Age rituals of reuse describe a social/religious strategy that in its essence focused on the necessity of creating a history and the maintaining of a pre-Christian ideology. Through the repeated ritual use of 'ancient' monuments a Viking Age population could express a certain identity and social right to a particular area. In that sense the old monuments served as perfect ritual 'tools' around which a collective memory could be 'invented' in both the mental as well as a pragmatic physical sense (Hobsbawm 1983; Strömberg 2005:259). Through repeated ritual action a pre-Christian Viking Age farming population could annex ancestors as well as a history in relation to a specific place. Thus through ritual they could constantly remind themselves and the surrounding world of their rights to the land and the history. In my

interpretation, the Viking Age reuse of Bronze Age monuments that occurred in the province of Halland in the ninth century illustrates that social constructions of a history and a collective memory almost always revolve around a more or less elaborate appropriation of the past for different social/religious reasons. In the pre-Christian Viking Age the past was used both to create and uphold collective memories. Through ritual, and a deliberate institutional and collective memory, Viking Age local society could manifest and justify itself ideologically in a number of ways. Members of society, as well as society as a whole, could use the past to enforce ideological stability and to provide for possible social, political or religious developments. The active and ritualized use of the past has been reconsidered as a great social and/or political resource to society, especially in periods characterized by social instability and threats of more or less radical change. Through a repeated and institutionalized ritualized reuse of the past, the order of pre-Christian Viking Age society could be legitimized over and over again. As such, for obvious pragmatic political reasons, this kind of legitimization was a social necessity in society in the Late Viking Age. As such, from a pre-Christian Viking Age worldview, the repeated ritual use of the past can be regarded as an ideological defence mechanism that was probably of utter importance in relation to the changes in the tenth century heralded by the coming of Christianity.

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MATERIALITY AND SOCIAL CONCERNS

THE 3M: MATERIALITY, MATERIALISM AND MATERIALIZATION

Timothy Earle

Abstract: Archaeology is the science of material objects. As a model for an integrated approach to material residues, I concentrate on the 3M of materiality, materialism and materialization. Materiality looks at the cultural qualities of being material, by which the objective form and subjective meaning become fused. Materialism explains social and political processes as linked inexorably to underlying economic conditions. And materialization is the social process, by which culture is created materially. Each has a history of scholarship that often ignores the others. Building on discussions and collaboration with Kristian Kristiansen, my goal is to illustrate how the three approaches form a unified theory of things. My case study is Kristian's Nordic sword.

Keywords: materiality, materialism, materialization, commodity chains, Bronze Age swords

Introduction

Archaeology studies social and cultural processes through the lens of the material record. Traditionally archaeologists have used objects, their distributions and their associations to establish archaeological cultures linked to regionalism, migrations and acculturation. More recently archaeologists have begun to study the role of objects themselves in institutional and identity formation and in social and power relationships. Influenced by Friedman (1979), Kristian Kristiansen has considered how objects were used to build and maintain social formations (Kristiansen & Rowlands 1998). He focuses especially on distant relations, involving trade, migration and travels (Kristiansen 1981, 1984, 1987a, 1994, 1998, 1999, 2006, 2007; Kristiansen & Larsson 2005). In his analysis, foreign objects helped structure new institutions of power within local contexts. The esoteric stories from afar built ideologies that connected emerging power elites across Bronze Age Europe. Especially important to him has been the role of the sword.

A brief history of my collaboration with Kristiansen may be of interest to scholars and friends, who know him in his many manifestations. I met Kristian in 1983, when I invited him to participate in a symposium 'Specialization and exchange in the development of complex societies: archaeological evidence' at the XIth International Congress of Anthropology and Ethnology held in Vancouver, Canada. Seeing common research interests, my friend Antonio Gilman had recommended that I read Kristiansen's work for comparison to my Hawaiian research. I immediately recognized an intellectual comrade, whose ideas have helped sharpen my own. During the 1980s, I was involved in a Peruvian project studying the emergence of highland chiefdoms and their conquest and incorporation by the Inca Empire (D'Altroy & Hastorf 2001). The Andean case and the Hawaiian case appeared to have many similarities; both were based on relatively high population densities, intensive and productive agriculture and a virtual absence of trade. The European case, which Kristiansen was dealing with, was distinctly different; population densities were fairly low, agriculture was less intensive and long-distance trade was critical. I envisioned a three case comparison, using the European material in contrast to my Hawaiian and Andean cases, to develop an analysis of how chiefs came to power under contrasting ecological, economic and political conditions (Earle 1997a).

I spent the 1986/87 academic year at Cambridge to read in depth on the Wessex case. That spring, Kristiansen arranged a lecture tour for me, we talked at length about my comparative interest in chiefdoms, and he suggested that we set up a joint field project to study the emergence of social hierarchies in Denmark. Although I considered myself then to be an Andeanist, history intervened, and I had to cancel my long-term Peruvian research. With a Christmas snowfall, Jens Henrik Bech, Kristiansen and I met at Kristian's warm apartment in Copenhagen to plan what was to become the Thy Archaeological Project (Bech 1993; Earle et al. 1998). From 1990 to 2008, I worked in the field with Kristian first in Thy and later in the Benta Valley, Hungary. We talked about many things at the field camps, during visits to his Danish apartment and home in Sweden, and at our respective summerhouses on Sjælland and Cape Cod. He participated in a 1988 Advanced Seminar on chiefdoms at the School for American Research (Earle 1991), we joint authored grant applications, reports and articles, we met annually 1999-2008 at a three-project winter meeting usually held in Rome, and in 2010 he presented concluding remarks at an American Anthropological Association session organized in my honour.

Working with the American adage 'make no small plans' and with the success of the Thy project as a model, Kristiansen designed and received funding for three large field projects to run concurrently in Tanum in Sweden, Százhalombatta in Hungary and Monte Polizzo in Sicily. After a final winter meeting in Cambridge, we co-edited a book combining comparative chapters on different themes ranging from prehistoric environments to household organization (Earle and Kristiansen 2010). One of the most stimulating times in my career was staying at Kristian's Hindås home to write our introduction and conclusion for that book. I work best in the early morning and Kristian, late at night; we sat in separate rooms working and reworking drafts at complementary hours to be ready for the other. In the introduction to that work, we developed a basic framework for materiality that forms the foundation for this chapter (Earle & Kristiansen 2010). Kristian's energy, intellect, creativity and social sense made our continuing collaboration both exciting and highly productive.

The Early Bronze Age Chieftly Sword

Two memories capture Kristiansen for me. One is from deep in the magazines of the National Museum in Copenhagen as

he demonstrated how to hold and wield a bronze sword; the other from Thy as he stood atop a barrow overlooking the open landscape where we planned to work. Kristian became my image of the Scandinavian Bronze Age chief. Travelling around the museums of Europe, he always wanted to record their swords. Early on, he had recognized that the patterns of sword finds could establish patterns of trade and travel (Kristiansen 1981) and that wear patterns on the hilt and blades could measure the daily wear resulting from the use-life of the sword and use damage, to measure extent of fighting (Kristiansen 1984). His classic article 'The tale of the sword—swords and swordfighters in Bronze Age Europe' (Kristiansen 2002) is foundational to my chapter, in which I use ideas borrowed from anthropology to illustrate a material-culture approach in archaeology. These anthropological approaches help explicate the material processes involving all steps in the distant commodity chains for swords.

As described by Kristiansen (2002), the Bronze Age sword was a weapon of war, as well as a symbol of warrior and chiefly status. Although I could find no detailed analysis of variation in swords, they appear to average perhaps 80 cm in length and weigh perhaps 1.2 kg. The blade is often leaf-shaped, thickening at midsection, and the weight is remarkably well balanced.

The sword was a carefully crafted weapon and was deadly in close conflict in the hands of a well-trained warrior. The actual use of the sword in combat is documented by the blade damage described by Kristian's research.

Swords had specific life stories that were deeply imbedded in the social and political life of the people who used them (Kristiansen 2002). In fact that real life of the sword was much longer and more complex than any individual could have comprehended. Beginning with mining the ores and their smelting, long commodity chains for the metal ingots and manufactured objects stretched across vast regions of Europe and Asia. *A commodity chain is 'composed of the stepped sequence from initial resource extraction, to manufacture and assembly of components, to the global distribution, and ultimately to local consumption'* (Earle 2010: 210; see Blair 2009). Many expedient objects used by prehistoric people have remarkably short commodity chains. For example, stone cutting and scraping tools were often made on the spot from locally available materials, and pottery was typically made by community specialists for exchange among neighbours (Earle et al. 2011). Although distant commodity chains in display materials or specialty stone objects have a deep human history, the Bronze Age witnessed the creation of the first high-volume, extensive and broadly integrated commodity chains of prestige objects (Kristiansen 1982).

Individual narratives for transport, transfer and use of swords illustrates the complex social relationships involved in commodity chains. A sword's narrative begins with the mining of its copper and tin. Ore sources for these metals were quite localized across Europe, requiring the development of complex trading networks. Most mines were superficial affairs, sometimes called trench mines probably targeting oxide ores (Timberlake 2003), although in some situations like Great Orme in northern Wales, mining used simple galleries not unlike earlier Neolithic flint mines (Lewis 1996). Mining technology was rudimentary involving bone and sometimes antler picks, fire, and minimally modified stone hammers. Smelting of oxide ores would have been quite simple and small scale, probably located close to the mines so as to minimize costs of bulk transport. Many small mines and smelting operations would have dotted the source areas, allowing

many local communities and families to participate in small-scale, uncoordinated extraction. As an example, the small copper mines in the Austrian Alps were associated with villages without evidence for concentrated wealth or power (Shennan 1999).

According to place on the trade networks, the volume of traded metal and their means of transport would have varied considerably. Along major routes like the Danube or coastal area, volume would have been quite high, probably transported by fairly large boats. In the peripheries of the metal trade, such as in Scandinavia, however, the flows of metal would again have been broken down into smaller volumes; in economic jargon, this is a debulking process to deliver goods to local areas, and it would have created branching networks of movement. The volume of trade there was probably quite low in most locations, often handled by a prestige goods network linking together chiefs of one locality and the next (Kristiansen 1982). Here the production, distribution and use of the metal swords would have provided the architecture to define rather new chiefly and warrior identities (Kristiansen 1978; Treherne 1995). In the Early Bronze Age of Scandinavia, swords were elaborate in their crafting, and a relatively few gifted metallurgists probably made them for chiefly patrons (Kristiansen 2002). Then the chiefs would have given the swords among themselves and to their supporting warriors to create a class of distinguished elites possessing these special objects of power. Chiefs and warriors must have been so closely associated with their swords to make unthinkable any broad commodity-like distribution. Swords would ultimately have been buried with their owner or deposited ritually in special locations (Kristiansen 2006).

Materiality, Materialism and Materialization

Materiality is the quality of being physical, the thingness of an object. The best review of materiality is by Daniel Miller (2005) introducing his edited book of that name. He argues that materiality bridges the common-sense subject-object dichotomy. The founding thinker is Georg Simmel (1968: 27), 'from this first great dualism springs the never-ending contest between subject [individual agent] and object [cultural product]'. To simplify, although human agents are the 'motor energy', the object takes on meaning (value) through intersubjective (person to person) exchanges and social contexts of use. In this way, the social subject and the material object used to craft social relationships and meaning become fused. As described by Bourdieu (1970) in his famous example of *habitus* and the Berber house, social actors replicate traditions in the routines of everyday life structured by architectural and behavioural arrangements of space, but at the same time they actively construct new patterns of actions as they build, remodel and inhabit the house.

Although often trained as archaeologists, researchers studying material culture typically relied on modern or historical sources to study materiality (see Miller 2005). What is a prehistoric archaeologist to do? Ethnographic studies of the symbolic significance of things inspire archaeologists to search for such meaning in prehistoric studies, but these studies become most convincing only when they rely on close archaeological analyses.

Archaeological studies should rely on details of the commodity chain. By replicating how an object was made, for example, we can estimate the labour and skill required in manufacture. The creation of the chiefly swords would have required many hours of work, considerable esoteric knowledge and much skill (Burridge 2004). Pyrotechnology is magical; it requires detailed knowledge of how high temperatures transform raw materials into a new

synthetic material, unimaginable from its original ingredients. One can imagine directly how a wooden spear or stone axe could be made by cutting, flaking, and polishing; the original material seems almost to 'contain' the final object. For the metal sword, however, a new molten material is created and fashioned into completely novel forms. Smiths have often been associated with unnatural powers of creation, and his swords had magical properties (Hedeager 2011: 139).

Analysis then considers the use of the sword in battle, based on the technical potential for the sword and its use wear. Its weight, sharpness and durability allowed for certain effective moves in combat, again replicated by experimentation. Any sword would be more or less effective, given specific combat practices that varied across time and space, and reliability was always of primary importance because of the consequence of failure in combat (Oswalt 1976). I think back to Kristian's (2002) demonstrating the balance of a bronze sword and the fighting moves possible by its weight, size and shape. An object's characteristics open up opportunities for use, as they close down other options. Here an understanding of a sword's (or other weapon) practice in battle helps determine the degree of training required to master its best use. Many warrior instincts were created by training and combat with a sword, making the warrior and the weapon one.

Contexts of sword finds and their broader cultural associations offer other lines for archaeological investigation. Analogous to a person, special objects, such as a sword, have social lives (Apadurai 1986), in Kopytoff's (1986) terms, biographies or in Kristiansen's (2002) terms, life histories. Swords entangled long sequences of social events involving manufacture, gifting, use, ownership and final disposal. As described by Weiner (1992), objects like the sword were 'inalienable', closely identified with its owner and his social being. A warrior was bound to his sword, which he carried with him, used in combat and often had buried with him at death (Kristiansen 1984). The creation and transfer of a sword person to person could not be made as a commodity; rather, it had to be produced and exchanged in socially charged contexts. To sell or lose your sword would have disgraced the warrior; that is why in many societies, the defeated warrior is stripped naked of his dress, weapons and other accoutrements that carry prestige and renown (see Hill 2000). A Bronze Age warrior appears to have maintained a set of specific grooming and dress fashions, and the wearing of the sword would have been central to his social image (Treherne 1995). At certain times, the inalienability of the sword must have required its burial with the warrior; under the Early Bronze Age barrows across Scandinavia, the warrior or chief was laid out with his sword as his side or across his body, or alternatively, the swords were placed in special caches often associated with wet places, an apparent 'door to the netherworld' (Kristiansen 2006: 177). As social positions became hereditary, swords may increasingly have been inherited, associated with warrior or chiefly genealogical lines. Heirlooms, such as swords, encapsulated the memories of family histories that associated the living with the accomplishments of their ancestors (Lillios 1999; Van Dyke & Alcock 2003). I wonder whether the increasing wear on sword hilts, as used by Kristiansen (1981) to measure circulation time, may indicate new patterns of inheritance for the swords along chiefly and warrior lines. For an inalienable object, like the sword, this behaviour would seem a reasonable alternative to burial.

Some researchers argue that special objects, such as swords, have 'agency', meaning that their particular engagement with social events determine outcomes in human behaviour, interactions

and meaning, much as a social actor might (Gell 1998; Meskell 2004). Iron Age swords of Scandinavia were often named, had very specific histories of use and curation, and their imputed magical quality could determine the outcome of battle (Hedeager 2011). The sword thus takes on many of the characteristics of a person, although I believe that the use of the concept of agency is inappropriate here. Humans have agencies; objects have histories that are remembered, created and used strategically by people to form and manipulate social relationships. The sword illustrates well the ways that the histories of objects and human lives became intertwined.

In complex commodity chains, however, as involve modern markets (for example, Hansen 2000) or long-distance trade as for the bronze sword, only parts of an object's life history would have been known or remembered. Traders, specialists and elites created stories to increase the perceived value of an object like the sword. Except for the rarity, strength, sharpness and color of the sword, the chief would know little about the earlier history of its ore, its smelting into metal, and its transport as ingots or scrap across many societies. As an analog, in order to increase value and mystery of pottery (not produced on the region's islands), the Siassi traders of New Guinea described pottery as the shells of deep-sea animals obtained by divers with great difficulty and risk (Harding 1967; Sahlins 1972). The segmentation of the chain illustrates the emerging class-based, elite-dominated political economy, in which many steps brought the sword to the warrior. Each social boundary would have created limits to the transfer of knowledge and corresponding opportunities to create new stories. When an object moves from hand to hand, an object's biography can be transformed and knowledge of its earlier history erased or reconfigured. Although integrated by the flows of materials, the sword's commodity chain would have been segmented into segments that were socially separated.

Thus when we speak of the biography of a sword, it would have involved only the socially significant steps in its history. The invented magical qualities of metal and its manufacture could well have been stressed, especially if it involved chiefly travels gaining access to imputed special powers (Helms 1979; Kristiansen & Larsson 2005). Essential for the sword's life history would have been the particular gift transfers between chiefs and their warriors, the possible inheritance of the sword, burial with a chief or warrior, and perhaps its later retrieval.

Materialism argues that physical conditions of resources, technology, and cultural objects determine and are determined by social and political relationships. Modern materialism is based on Marx's argument that historical, material conditions (resources, technologies, and their uses) determined political power. Humans fashion their material conditions that form and support particular social formations or means for organizing people. In the words of V. Gordon Childe (1952): *Man Makes Himself*. Thus humans create the relationships of production based on ownership and access to resources and technology to transform them into objects of value, use and intimidation. The natural distributions of resources determine potentialities (abundance, productivity and possibilities for control). For example, irrigation channelled the development of politically stratified societies in many world areas. Across Polynesia, islands varied according to size, agricultural soils, rainfall and temperature, and the resulting potential for agricultural development, population size and political complexity (Sahlins 1958; Kirch 2000). Irrigation relied on the availability of permanent streams and alluvial soils. The large and well-watered Hawaiian Islands offered the best potential for irrigation farming,

and Polynesian colonizers created a patchwork of irrigation systems with the result that the most productive lands were highly concentrated, and emerging chiefs could assert ownership over them to extract surpluses (Earle 1978). The centralized and stratified society was an outcome of how resources allowed for certain patterns of subsistence production that could be controlled by chiefs. Human societies 'have their origin in the material conditions of existence' (Marx 1976 [1859]: 3).

Analysing the Bronze Age sword, materialism emphasizes its primary utility to dominate through intimidation, injury and death. The development of the sword transformed structures of power, but not in a simple technological sense. Only when the specialist warriors, trained in close combat, used the sword, did its potential for domination become evident. The sword alone would offer little advantage, but when used by a new cadre of warriors, the political world of chiefs was made possible. Swords in the hands of specialist warriors became instruments of power, important to protect and seize productive lands, transport routes and wealth. A sword's commodity chain offered four sets of chokepoints in trade and transformation, whereby chiefs could establish control over the new weapons and by extension their warrior enforcers. I believe that the commodity chain for Bronze Age metal helped create a new set of opportunity to fashion a political economy controlled at different points by many leaders.

Assuming that mining and smelting of copper and tin ores rarely created opportunities for control, the first chokepoints were in transportation. Emergent chiefs, acting as entrepreneurial traders, could have built special watercraft capable of moving metal and at the same time of ferrying warriors to defend cargoes. The capital requirements for building the watercrafts permitted only some to have sufficient surplus to have boats and support warriors and sailors. Along the main transport routes, such as the Danube or coastal areas, the relatively high volume of transport would have created an immediate opportunity for chiefly control, because larger and more costly boats would provide an economy of scale in transportation. From early in the Bronze Age, Childe (1952) sees the Bell-Beaker people as the beginnings of social complexity positioned close to water probably to handle trade as well as the technology of metallurgy. Although I know of no research identifying later BA traders, they most probably existed (Kristiansen 1981, 1998). During the Late Bronze Age of Denmark, the pattern of wealth distribution documented by Kristiansen (1978) suggests a rapid focusing on eastern islands, such as Fünen. At this time, the coast areas of Sweden also witnessed the making of impressive rock art panels with many ships and crew, and of rock cairn burial monuments overlooking the sea. Kristian and I plan an article studying the emergence of trading chieftaincies in Late Bronze Age Scandinavia, where chiefs probably relied on a specialized maritime technology, seamen and warriors. We believe that the political economy of this period was analogous to later Viking chiefly traders-raiders (Kristiansen 1999).

All along the major trade routes, a contrasting opportunity for control must also have existed for chiefs and their warriors to act as 'settled raiders', positioning settlements on the rivers to monitor movement and to extract wealth payments. The pattern of metal wealth in the Bronze Age followed the major river routes (Kristiansen 1998). In Hungary, for example, the chiefs of the Vátya placed their hill forts along the cliffs of the Danube, probably extracting 'gifts' from trading chiefs in return for safe travel through their territories (Earle and Kristiansen 2010). Chiefs and their warriors acted both to facilitate and impede movement

of metals and other wealth and so to extract 'surplus' wealth to finance their chieftaincies.

The second chokepoints involved control over production and movement of exports traded for the metal. Any location in Europe that produced internationally desired high-end export items would have provided chiefs and their warriors opportunities to monopolize those exports traded for incoming metal. Such exports include cattle hides, amber, jet, and probably furs and slaves (Kristiansen 1987a). Each export product would have had different possibilities for control based on their natural conditions and the development of their industries. For example, across the peripheries of Europe, a patchy distribution of grasslands created an opportunity to control cattle production and their export products (Earle 1991, 2002; Earle et al. 1998). As I describe the linkages (Earle 2002), the building of barrows through Scandinavia and England asserted elite ownership over pasturelands on which the cattle grazed. These barrows were erected high in the landscape in areas well suited to pasture; here chiefs, warriors, and independent farmers were buried. In Denmark, these burial monuments varied quite dramatically in scale, mirroring the social hierarchy seen in contemporary houses. The barrows, built rapidly in the Early Bronze Age, would have planted the ancestors in turf mounds establishing lines of inheritance for the pasturelands on which they stood. Cattle raised on these owned lands would then have produced hides and other products for export, and control over these exports would have been critical for obtaining the metal for the swords. This pattern of ownership over productive grasslands may help explain why Thy, for example, had one of the highest concentrations of barrows and metal wealth during the Early Bronze Age in Denmark (Kristiansen 1978). Simply owning particularly productive pasturelands apparently translated into an advantage to import metal used for swords, other weapons and display wealth.

Control over the movement of export items could also explain some chieftaincies on the peripheries of the metal trade, where metal trade itself would have been difficult to control. In the Early Bronze Age of southern Jutland, an exceptional development of social hierarchy has been observed. Kristiansen (1978) identified this region as one of the richest areas in Denmark based on metal finds from that period, and systematic rescue excavations have now documented a strong hierarchy in houses, dominated by large central halls over 50 m in length (Ethelberg 2000). If special Scandinavian exports in cattle, from Thy for example, were funnelled through southern Jutland, control over the exports could have translated in this political complexity. Cattle raised in northern Jutland may have followed established overland drove roads south towards the primary international markets in Germany (a pattern well documented for the medieval period) (Johansen et al. 2004), then control over and perhaps even improvement of these roads could have translated into partial control over exports and so the international flow of metal wealth.

The third chokepoints involved artisan production of the swords. The esoteric knowledge of high-end metallurgy meant that only the few most gifted and highly trained metallurgists could make the stylistically elaborated and durable swords (Kristiansen 1987b, 2002; Earle 2002). Chiefs could control production of swords by attaching specialists to them, and could then supply these swords to their warrior cadre responsible for defending the chiefs' ownership of key resources. In the Early Bronze Age of Scandinavia, only a few highly gifted smiths appear to have worked with a new and technically complicated series of pyrotechnic procedures including casting, lost-wax molding,

tempering and other techniques (Kristiansen 2002). Offering desirable compensation, a chief could entice a bronze specialist to take up residence on his farm and produce swords for him alone. When complicated metalworking was first brought to the north, evidence suggests that production was restricted to the chiefly farms (Earle 2002). As described previously the chiefly swords in particular were exquisite products of highly gifted craftspeople, but additionally making the whole accoutrement of elite male and female dress and toiletry items also involved special techniques for moulding and shaping (Treherne 1995).

During the Late Bronze Age, many metal objects became technically quite simple and more generally produced; for example in Thy, we recovered at even simple farmhouses the bronze working crucibles used for small-scale production (Earle et al. 1998). At the same time, however, gifted craftspeople were making some extraordinary new metal objects, including the famous lurs, horned helmets and ritual drinking cups (Kristiansen 1984). With the combined characteristics of elaboration and durability in combat, swords would always have been technically complicated to make, and only the best smiths would have made these swords for their patrons.

Fourth, as points of control, must have been the organized distribution and use of the swords themselves. As described earlier, by controlling the manufacture and distribution of swords, Scandinavian chiefs could have controlled access to these weapons and thus built by gift exchange confederacies of chieftaincies.

To summarize, the complicated commodity chain for swords created different chokepoints that served as opportunities for chiefly control in an emergent polity economy. The ability to control the production, distribution and use of such significant objects was foundational to the development of social complexity, stratification and political centralization during the Bronze Age in Europe. Fundamental to this process was the establishment of the property rights over key lands, resources, technology and knowledge, and the support of a warrior elite to seize and hold these rights. Although the Bronze Age documents a broad-scale development of complexity, I want to emphasize that the nature of the chieftaincies would likely have been highly variable based on the particular chokepoints available from place to place. Thus chiefs in one area might rely on production of exports and another on trade, and the particularities of each chokepoint(s) would have translated into different extents and strategies for chiefly power. A materialist perspective should help us to understand the micro-regional variation in political development across Europe in the Bronze Age by looking at the specifics of the chiefs' articulation with the commodity chain for swords.

Materialization is the transformation of ideal, values, stories, myths, and the like into a physical reality that take the form of ceremonial events, symbolic objects, monuments and writing systems (DeMarrais et al. 1996). Cultural processes involve making meaning, and that meaning is heavily embedded in the material products that carry the meaning. Humans select particular ways to express meaning and value, and in that process of making culture they structure social relationships of power. To understand the emergence of social complexity, we should investigate how the processes of meaning creation would have become controlled by elites. My argument is that the specific media chosen for cultural expression allowed chiefs and other members of the ruling social segments to control ideology. Here the material availability and processes of production and exchange created chokepoints in the commodity chain of the expressive media. In essence, the creation

of culture became part of the political economy, allowing linkage to beliefs as a source of power (Earle 1997b, 2004).

Basic to this process was the selection of particular materials and skilled manufacture for the making of symbolically charged objects, such that the media of expression could be controlled (Earle 2004). In Late Neolithic Scandinavia, regionally mined flints were knapped to form daggers that copied metal prototypes. Particular flint sources produced the proper material from which to knap the best daggers. Through experimentation, archaeologists have been able to replicate the procedures working the flint. To make a dagger, a skilled craftsman alternatively flaked and ground the flint to shape a remarkable item (Apel 2001; Stafford 1998). Such daggers are found almost always in burials and probably were carried as a sign of warrior identity. In Thy, simpler daggers were recovered routinely in field surveys and from most household excavations (Earle et al. 1998). Flint weapons most probably served most males as defensive arms and symbols of male protection. Although some extraordinary daggers were made, everyone could have a dagger made of locally or regionally available flints, crafted by knappers with a range of skill levels.

The makers of Early Bronze Age Nordic swords, by contrast, required highly specific technological knowledge to work the foreign materials. The craftsman was evidently highly trained, and only a few people were probably capable of making the fine swords of that period (DeMarrais et al. 1996; Earle 2004). The shift from the flint dagger in the Late Neolithic to the Early Bronze Age sword was not a change in symbolic significance per se. Rather the change in media of the symbol changed its potential for control and thus helped transform the social nature of the Nordic world. The bronze sword became associated with a new warrior class probably linked to the chiefs, who could control the distributions of metal and the operations of the skilled craftspeople necessary to produce the sword. In simple terms the sword had a clear association with distinction that could not be falsified. The sword was, of course, only one of the objects and monuments that together materialized the distinctiveness of chiefs and their warriors. These include elements of their everyday life, their large and well built houses, social rituals of rank and distinctiveness, and burial ritual associated with permanent monuments in the landscape (Earle 2002). The sword, embedded in the broad material conditions of chiefly and warrior life, created an integrated theme of distinction.

When discussing materialization, it is important to recognize that chiefs and warriors did not exist in a social vacuum, and it is likely that other segments of society did not fully accept their subjugation. Others would have striven to express their own identity and distinction, probably using different media for expression. For example, some weapons continued to be made out of materials other than bronze; these weapons would have been much less controllable because their commodity chains were shorter and less technically complex. Flint daggers, occasionally even flint swords, and probably a range of wooden weapons would have been manufactured, distributed and used by people removed from the chiefly dominated metal commodity chains. In Tanum, Sweden, for example, flint daggers dating to the Bronze Age are quite common (Ling 2008: 8), and their frequency may well represent separate access to weapons and symbols of distinction carried by those weapons. Use of non-bronze weapons may have allowed non-elites, people like mariners, to participate in systems of belief and presentation associated with the chiefly warrior identity.

Kristiansen and Larsson (2005) discuss how the belief systems of Bronze Age Europe linked cultures across the continent and into Asia. Much of this linkage, I would argue, was the scaffolding of the bronze-based world economy. But not all. The Bronze Age cultural expression had many media of expression that were developed for rather different purposes. The representations of ships and chariots probably express glorious stories of warfare and the gods, and archaeologists propose common themes hoping to link them to myths documented in later text. This has been done effectively for the later Iron Age (Hedeager 2011). In the deeper past, intriguing meaning can be proposed, but perhaps the most important element is not to be able to identify specific mythic stories, but to describe the alternative means to materialize those stories with contrasting patterns of control and access.

Participation with a society's mythic stories is foundational to the structure of society. In the Bronze Age, elements of these stories were illustrated with metal objects, such as the moulded helmeted and acrobatic figures and engraved ship images (Kristiansen 1998: 97). Not visible, but inferred by analogy to the later Viking Age (Earle 2004), a wide range of wood carvings by gifted artisans would probably have enveloped chiefly houses, boats and wagons with graphic representations of these stories. In Bronze Age Scandinavia, an important medium of expression for these stories was also in the rock art with its images of ships, chariots, dual individuals with battle axes and the like. Upon first seeing the Bronze Age rock art in Tanum, my initial reaction was rather disrespectful. I saw these famous images as rather crude, done in a decidedly egalitarian medium. There was nothing exceptional here artistically, except for the full graphic representation of Bronze Age mythic stories, much less well represented in other media available archaeologically.

Rock art is generally associated with forager groups in Australia, South Africa, or North America, sometimes with egalitarian agriculturists as in the American Southwest or the French Alps, but only rarely with more complex societies (Earle 1994). The technology of the Tanum petroglyphs is simple, similar to that among forager artists: pecking of a two-dimensional image with a stone hammer on a natural stone surface. No special skill or tools would have been needed, beyond the knowledge of the image, its significance and ceremonial use. Most Scandinavian rock art could have been produced by most people in that society with elemental technical training. Although the content of Bronze Age art may have been esoteric, its expression in rock art was basic. In simplest terms, why would a chieftain or his specialists want to peck an image into stone of his boat when he owned that boat? The simple answer is that the rock art probably offered an expressive medium unrestricted by chiefs that allowed other social members a chance to position themselves with respect to the social narratives (Ling 2008).

The rock art, in contrast to the other controllable media such as the bronze used for swords and other symbolic objects, would seem to be particularly problematic. Assuming that the images of boats, warriors, chariots and the rest represented elements in important social narratives, their representation in the rock art would have been extraordinarily difficult to control centrally by chiefs. Thus the rock art panels do not document chiefly control; rather, they illustrate that by changing media, a broader segment of the population could manipulate the same narratives for their own purposes. Since anyone could have produced the art in the disbursed locations where they are found, those artists could claim their own interpretations for the stories represented by the ships and other figures. That is exactly what may be the importance

of the rock art. Rather than a simple repetition of a common ideological message, the rock art may well represent a broadened access to the narratives, signifying a non-exclusive participation by those of lesser rank, and as such marked a weakening of control over cultural narratives. The association of the Tanum rock art with the sea coast suggests its probably association with mariners. Note that the rock art is not associated with the rock cairn burials, where maritime chiefs were probably buried (Ling 2008). Those producing the art rock were most probably acting independently of the chiefs, expressing their own connection to society's stories, and probably reinterpreting those stories to highlight their sailors' roles.

Understanding materialization gives a clear means to understanding how the elite segment shifted the media of expression to make ruling ideologies. The association of high arts, developed with exceptional skills and fine materials, provide the perfect means controlled by elites to expressing elaborate founding narratives as part of their power strategies. However, the nature of ideology and its expression is such that control is always fundamentally problematic (Earle 1997a). The same narratives could be represented, reinterpreted and communicated in contrasting media that provide alternative means to develop meaning and value. As a process of creating meaning with objects, materialization requires a materialist logic showing the interrelationships between material properties, cultural value and sociopolitical structure.

A Material Trinity: A Proposed Unified Theory for Archaeology

A trinity of materiality, materialism and materialization forms the legs of a stool on which we can create a unified understanding of human societies. This understanding then provides logic by which to understand prehistoric societies as it also offers an unusual opportunity for archaeologists to contribute to broader understandings of how human societies operate. Prehistoric archaeologists can show how social context of production, exchange and use created power and meaning independent of any culturally specific narrative. In McLuhan's (1964) famous phrase, 'the media is the message'.

I try here to create an intellectual model to unite this material trinity. Simply summarized:

Materiality emphasizes how humans live in a material world of objects, landscapes and activities of ceremonies and everyday life. If events are social (intersubjective), they must also be material, and thus able to order the social relationships involved. Humans are entwined with the material objects of their creation and expression. We make objects, and objects make us. The sword, for example, was carried, used and buried with Bronze Age chiefs and warriors. The status and role of these powerful individuals were bound inexorably with their inalienable swords. How do the interrelationships between social beings and things such as the sword come to be?

Historical materialism is the broadest explanation of how social relationships of inequality arose. The scaffolding of social relationship is the underlying material conditions that provide sustenance and power in human life. Material conditions have roots in the natural world, but they are crafted strategically to pile up or to resist the powers of the few over the many. Thus the chiefs' abilities to control the distribution, manufacture and use of

swords translated into the ability to control the warriors to enforce new systems of property, distinction and rule.

Materialization is the particular process by which meaning and value are created. Here the key is to understand that the meaning and value inherent in cultural systems can be expressed in an infinite array of material forms, but that the choice of media helped to determine who could control the making of meaning and its representation. Because materials can be owned, gifted and crafted to create meaning, the operational question is whether the particular media chosen were more or less easy to control by emergent leaders. Control (or its lack) over material processes translated into the centralization (or alternatively the decentralization) of power deriving from the creation of meaning and value. Here the specifics of the object, landscape and activity must be studied in detail to understand these social contexts and how they relate to emergent political domination in the worlds of past and modern societies. Weapons of war were central to identity and power in the Scandinavian world, and the adoption and use of the bronze sword created the material conditions by which social distinction could be controlled by emergent chiefs.

The work of Kristian Kristiansen and his many collaborators suggests pathways to a rather revolutionary understanding of how human societies operated and developed based on warrior might and symbolic references to grand narratives both locally and at a distance. It has been an honour to work with Kristian on these topics. He brings people together, emphasizing how their divergent approaches are complementary. His respect and encouragement for his colleagues of all ages is my model for academic life. He also grasps how intellectual collaboration is based on the material reality of having fun together in daily work and ritual feasts. He stands against ideals of solitary scholarship and confrontation by standing up at the feast table to toast the common achievements of the group. Although we must specialize in places, materials and intellectual approaches, we should follow his firm belief that it is the crossing over and interaction of ideas methods and databases where real progress is made.

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COSMOLOGIES IN CLAY: SWEDISH HELMET BOWLS IN THE MIDDLE BRONZE AGE OF THE CARPATHIAN BASIN

Joanna Sofaer

Abstract: Sun and wheel motifs are characteristic of European Bronze Age iconography. This paper discusses the expression of these motifs on Swedish helmet bowls and other vessels from the Middle Bronze Age in the Carpathian Basin. It explores the role of these vessels in materially expressing cosmological myths.

Keywords: Sun and wheel motifs, ceramic bowls, cosmology

In writing a piece in honour of a Dane it may seem slightly incongruous to choose the topic of Swedish helmet bowls! Nonetheless, the motifs on these vessels and the contexts in which they are found are relevant to themes that Kristian Kristiansen has previously addressed in his work, in particular his interest in the cosmology and religion of the Bronze Age, as well as his involvement in research at the Bronze Age tell at Százhalombatta in Hungary. In this paper I want to discuss the motifs on Swedish helmet bowls and other contemporary vessels in the Carpathian Basin, and the ways that these vessels may have been used to materially express cosmological myths.

Sun motifs are characteristic of European Bronze Age iconography and have long been widely discussed in terms of Bronze Age cosmology. Recent years have seen a renaissance in such studies with increasingly sophisticated and detailed explorations of the contexts and meanings of sun symbols. Kristiansen has played an important role in these discussions through his analysis of Bronze Age imagery throughout Europe as well as further afield. He has described a shared Indo-European myth about the sun's journey in which the twin brothers and helpers of the sun maiden, the Divine or Heavenly Twins, come to help her in the guise of ships and horses so that the sun can rise in the morning (Kristiansen & Larsson 2005). Based on this analysis, he has created models describing changes in the iconographic articulation of the journey of the sun for the Earlier and Later Bronze Age (Kristiansen & Larsson 2005: 306-307) and has also proposed that Bronze Age rock art in Scandinavia contains scenes related to the journey of the sun (Kristiansen 2010). Such work has added substantially to previous research on Bronze Age iconography, such as Kaul's important and detailed study of the decoration on Late Bronze Age bronze objects from Denmark. Kaul (1998, 2005) has described a complex mythology of the sun and its voyage through different spheres of the cosmos assisted by different agents (the horse, snake and fish) with day and night ships facilitating the sun's transport. Bradley (2006) has argued that images on prehistoric rock art signal some of the same ideas. The myth of the journey of the sun is not only an expression of the cyclical progress of the day, but also of the annual cycle, and perhaps even of life itself (Kaul 1998: 270).

The 4-spoked wheel, or wheel-cross, motif has also been associated with the sun (Kaul 2004; Kristiansen & Larsson 2005). Kristiansen and Larsson (2005) have demonstrated an intimate metaphorical relationship between the spoked wheel and the sun in log coffin

burials where wheels can replace sun discs in female costumes, or where the hands of the deceased were placed over the belt plate to form a cross. Indeed, the high degree of stylization in this motif sometimes makes it difficult to distinguish a wheel from the sun, except where the wheel has a hub or occurs in a pair, in which case its interpretation as wheel seems more secure (Johannsen 2010). Yet even when a depiction is clearly of a wheel it may still be linked to cosmology and myth; the wheel is important to the story of the sun's journey as it is part of the chariot of the sun pulled by a horse as in the Trundholm chariot, or a chariot ridden by a bird-head figure as in the Dupljaja model. Spoked wheels and wheel motifs are also associated with a range of other well-known high status or ritual objects such as the identical bronze objects from Balkåkra, Sweden and Hasfalva, Hungary dated to Montelius period I and variously interpreted as drums or stools (Knape & Nordström 1994; Kristiansen and Larsson 2005), the Late Bronze Age gold 'hat' from Ezelsdorf-Buch (Springer 2000), or Urnfield cult wagons (Maraszek 1997).

The geographically and chronologically widespread nature of both sun and wheel motifs suggest that they express cornerstone myths and beliefs prevalent throughout the European Bronze Age. In addition to rock art and special or unusual bronze and gold objects, they are also present in a variety of more common object types, for example Early Bronze Age wheel head pins, Middle Bronze Age ornaments, or Late Bronze Age pendants. They are also visible on pottery, however, with a few exceptions (e.g. Kaul 1998; Kovács 1977), ceramics have taken something of a back seat in discussions of Bronze Age cosmology. The so-called Swedish Helmet bowls are by no means the only type of decorated vessel in the Carpathian Basin, but they are particularly distinctive in the way that their shape permits the display of cosmological motifs. While other contemporary vessels may have decorative elements on the vessel body that are related to the sun and wheel (such as repeated small concentric circles), no other vessel type is deliberately designed to present the motifs in the same way as do the Swedish helmet bowls.

Swedish helmet bowls are large fine ware vessels characteristic of the later phases of the Middle Bronze Age in the Carpathian Basin. Found in both cemeteries and settlements, they are found in the Váta cultural circle with variants of this vessel type at some other contemporary sites including those of the Gyulavarsánd group (Bóna 1975; Görsdorf et al. 2004). Named for their similarity with the shape of World War I helmets worn by Swedish soldiers



Fig. 1 Swedish helmet bowl from Százhalombatta, Hungary. Photo: J. Sofaer.

(Vicze pers. comm.¹), they are frequently shallow with broad sweeping everted rims that are almost flat to the horizontal plane. A single disproportionately small handle loops from the rim to a strong carination that, in a Koszider variant of the vessel, may be elaborated with pointed bosses at the quarter points. Vessel interiors are burnished but undecorated while the exteriors are both burnished and decorated on the base (Fig. 1). All in all, these vessels are clearly designed to hang on a wall and be displayed, their flat rims fitting snugly against the surface with their bases visible to see (Sofaer 2011). Furthermore, the high levels of skill exhibited in the production and decoration of these technically complex vessels (Budden 2008) suggests that a significant level of investment was placed in their manufacture.

The form of Swedish Helmet bowls is designed to facilitate the display of decoration upon their large bases; indeed a key function of the vessel might be said to be the display of the motif. The range of decorative motifs on the base of Swedish Helmet Bowls is remarkably restricted. The motifs fall into two main categories reflecting Bronze Age cosmological concerns with the sun and the wheel. The articulation of these motifs is facilitated by the circular shape of the vessel base.

The sun motif (Fig. 2) is most frequently expressed by concentric circles incised around the base; sometimes there may be a single circle, but most often there are 2 or 3, and in some cases up to 5 circles. This may be further elaborated by the addition of four further concentric circles or half circles at the quarter points of the vessel, smaller impressed dots, or small circles depending on cultural affiliation. The sun motif is also found on bowls from

other contemporary cultural groups although their expression and the type of vessel on which they appear show stylistic variation depending on the cultural group in which they are found. In some Füzesabony fine-ware inverted rim bowls the incised circles may be replaced by rather baroque-looking pointed bosses surrounded by at least one, and more frequently two or three, concentric circles. In some Füzesabony, Gyulavarsánd, and occasional Vátya and Incrusted Pottery examples, circles may be drawn around an omphalos base, the dimple acting as an integral part of the motif. More rarely, the concentric circles at the centre of the base may be replaced by a spiral, as in examples from the Füzesabony site of Gelej (Bóna 1975). In another version of the sun motif found particularly on vessels in the Füzesabony group, the sun is represented through a star motif (cf. Kristiansen & Larsson 2005). Sometimes this is formed through the linking of five or more incised semi-circles, swags or zigzags around the base of the vessel, with a central circle or concentric circles in the centre. In some cases, where there are more than four bosses on a vessel, the baroque sun motifs of the Füzesabony and Gyulavarsánd groups can also be read as stars, depending on whether the viewer takes the bosses or the space between them as the focal point of the decoration.

The wheel motif (Fig. 3A and B) is expressed through the division of the circular vessel base into quarters with the four spokes of the wheel radiating from a central circle which may either be incised or an omphalos base. On some vessels, this central circle may double both as a wheel axle and as a sun through the use of concentric circles or repeated small incised dashes around the circle. The spokes of the wheel may also terminate in concentric half circles. In such cases, the decoration can be read as a combination of wheel and sun motifs. More rarely, this doubling up of motifs can be seen in the division of the central

¹ Dr Magdolna Vicze Matrica Múzeum, Százhalombatta, Hungary.

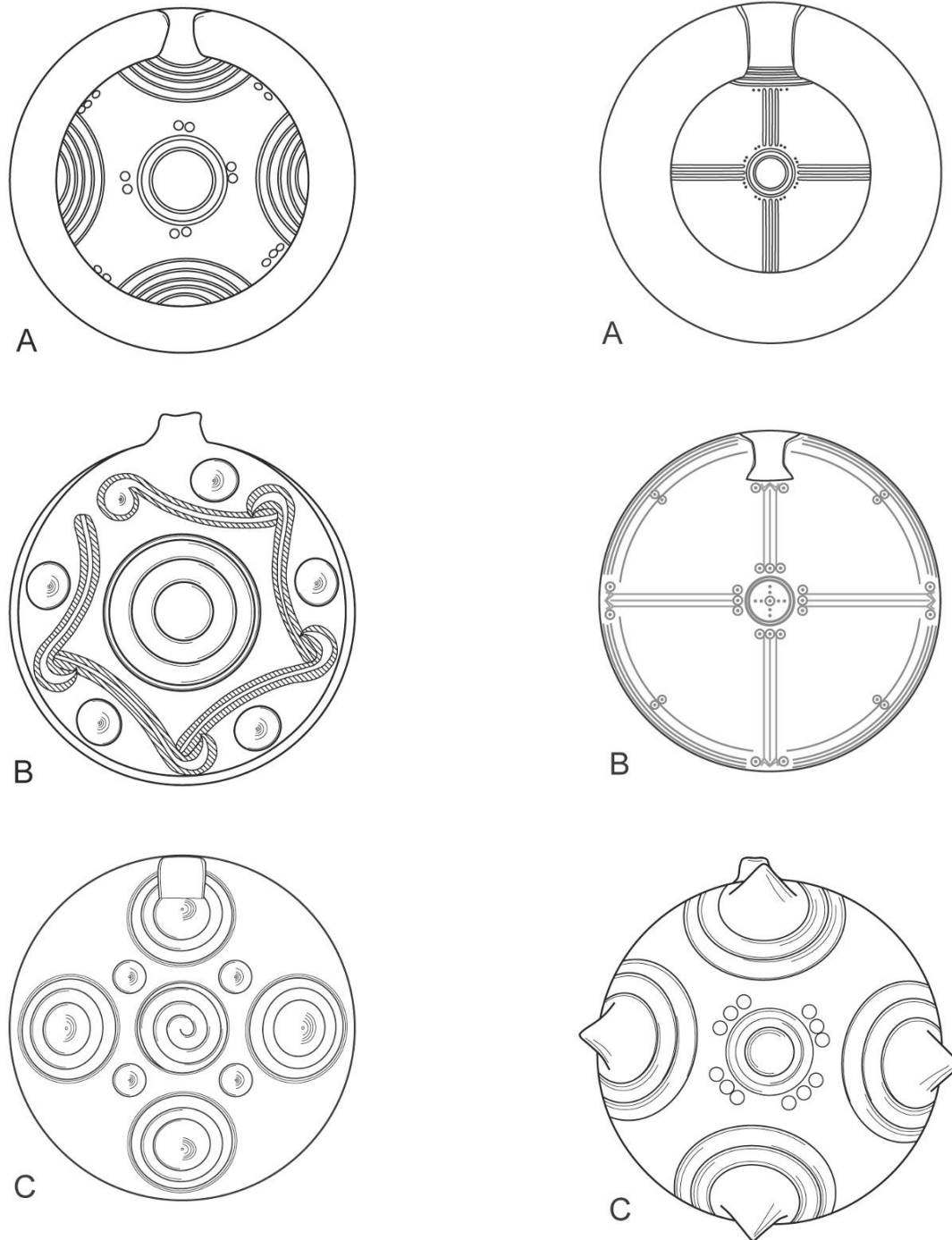


Fig. 2 Sun motifs on Middle Bronze Age bowls from the Carpathian Basin (after Bóna 1975).

A) Vátya bowl from Cegléd-Öreghegy

B) Füzesabony bowl from Megvaszó

C) Füzesabony bowl from Gelej-Kánálsdülő

Fig. 3 Wheel motifs on Middle Bronze Age bowls from the Carpathian Basin (after Bóna 1975).

The wheel motif created through 'drawing' it on the vessel in Vátya and Incrusted Pottery groups

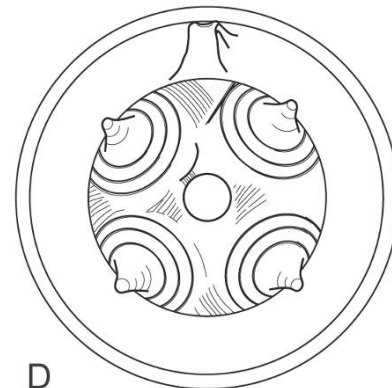
A) Vátya bowl from Kelebia

B) Incrusted Pottery bowl from Királyszéktistván

The wheel motif created through the undecorated space between bosses on Füzesabony and Gyulavarsánd vessels

C) Füzesabony bowl from Golop

D) Gyulavarsánd bowl from Gyulavarsánd-Laposhalom



circle into quarters, turning the concentric circles of the sun into a wheel-cross. The wheel is particularly common as a motif in the Vátya and Incrusted Pottery groups, at first glance seeming less frequent in the Füzesabony and Gyulavarsánd groups where decorative traditions focus upon curvaceous rather than linear motifs. Nonetheless, here too the wheel is strongly present. On some Gyulavarsánd Swedish helmet bowls and on contemporary fine ware Füzesabony bowls with inverted rims, rather than 'drawing' the motif on the vessel, concentric circles at the centre of the base act as a sun / wheel axle, while the undecorated space between pointed bosses emerging from semi-circles placed at the quarter points of the vessel act as wheel spokes. In such cases the whole bowl is turned into a wheel, the rim of the vessel acting as its margin (Figg. 3C and D). These vessels can therefore be read in two ways; through the 'positive' added embellishments and the 'negative' of the decoration.

The sun and wheel motifs are well-known in contemporary metalwork in the Carpathian Basin, for example the bronze discs with concentric circles, wheel or wheel cross motifs termed variously ornaments, pendants or amulets (Bona 1975; Hänsel 1968), or the sun-star on the butt end of axes and on the tops of pins (Hänsel 1968). Much of this material, however, comes from hoards as the quantity of metalwork from cemeteries and settlements in the Carpathian Basin is relatively small. In the latter contexts pottery is by far the most abundant material. In cemeteries the relative quantities of metalwork and pottery has led to the suggestion that pots may be the primary means of displaying status (Vicze 2011). In some settlements there is evidence for metal production in the form of workshops such as at the site of Lovasberény (Kovács 1977), or moulds as at the tell site of Százhalombatta, but in domestic settings pottery was an important and highly visible medium for expression with typological and decorative developments reflecting the work of confident, creative craftspeople (Sofaer 2010, 2006). While Swedish helmet bowls are only one out of a wide and varied range of contemporary vessel types, and comprise only a fraction of the ceramic material in Vátya settlements, they are nonetheless more common than metal objects. Given the cosmologically charged nature of the motifs on Swedish helmet bowls and their evident use for display, they may have been the primary means of materially expressing cosmological references in household contexts.

The location of cosmological symbols in mortuary settings is frequently accepted but their positioning within domestic settings has been less often pointed out. It is possible to envisage that Swedish helmet bowls played a similar role to that of the crucifix in modern homes. In other words, the bowls were material mnemonics for the story of the sun's journey, acting as important reminders of identity and belief to the pre-literate occupants of the houses in which they were hung. Yet, in the same way that displaying a crucifix or any other religious symbol in a modern home does not necessarily require that the house is turned into a sacred space, nor does such an argument imply this in relation to the Bronze Age houses. Furthermore, excavations at Middle Bronze Age settlement sites such as at Százhalombatta in Hungary have revealed almost no evidence for 'special deposits' (cf. Brück 1999; Hill 1996) in the houses. What the display of the bowls may suggest, however, is that the currency of the myth of the sun was strong even in everyday life. The bowls brought cosmology into the houses in a clear and highly visible manner, presenting an image of the universe that continually reminded inhabitants of their place in the cosmos.

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IN SMALL THINGS REMEMBERED: SCALE, MATERIALITY AND MINIATURES IN THE BRITISH EARLY BRONZE AGE

Andrew Jones

Abstract: prehistory, with a particular focus on the concept of scale used by Kristian Kristiansen. I argue that analytical divisions of scale typically elide with ontological categories, such as social and material. Such elisions serve to reinforce these ontological categories in our analyses of the prehistoric past. As an alternative, I adopt a 'flat' ontological perspective derived from the work of scholars in the field of Science and Technology Studies (STS) which examines the way in which the material and social interconnect and are embedded in one another, at the scale of human interaction.

A preliminary analysis of the miniature cups and other miniature artefacts of the British Early Bronze Age provides an exposition of these ideas. It is argued, in conclusion, that a closer analysis of the relationships of scale expressed in crafts offers a richer account of the interaction between communities in the European Bronze Age.

Keywords: pots, UK, Bronze Age, ceramics, theory, cups

Introduction

Western philosophy persists in dividing the world into distinct ontological categories: inanimate objects and animate subjects; material and culture; materiality and sociality. These divisions are perpetuated in archaeological discourse of both a processual and post-processual persuasion, as well as in areas such as archaeological science (Jones 2002); they are foundational to archaeology and to modernist thought more generally (Thomas 2004).

This paper is concerned with matters of scale, and the way in which the archaeological discussion of scale perpetuates these ontological divisions.

In this paper I want to consider the relationship between scale and the material world. I will do this by considering two aspects of scale: first the geographical scales at which we operate as archaeologists, and second the physical scale of artefacts. My argument will turn upon the points at which the two definitions of scale are inter-related. One of the ways in which we can consider this inter-relationship is by considering the ontological distinctions between society and material, sociality and materiality. I argue that the discussion of scale in both processual and post-processual archaeologies reinforce this ontological distinction.

We are familiar with arguments relating to the universalising scales at which processual archaeology seeks to operate in opposition to the fine-grained scales of contextual archaeology (Hodder 1999: 129-146). We might contrast a universalising account, such as Kristian Kristiansen's discussion of the scales of the European Bronze Age, with Ian Hodder's discussion of scales of analysis in the European Neolithic. For Kristiansen the European Bronze Age exists as a series of interconnected regional systems, connected together by the circulation of goods, such as copper, tin and amber. Kristiansen borrows his model of scale from social evolutionary theory and Marxism (world systems theory) and discusses the scales at which various ideal types of social formation operate, particularly chiefdoms. A key component of his argument is his

attempt to reconcile the immense scales and networks at which materials circulate with the regional formation of types of society; exchange and political power are therefore intimately related (Kristiansen 1998: 54). It is for this reason that Kristiansen has more recently invoked an institutionalized cosmology to explain the perceived similarities in societies across Bronze Age Europe, and Asia (Kristiansen 2005).

On the surface, Hodder's approach to scale appears to differ. He is interested in the interrelationship between microscale and macroscale as he considers the way in which symbolic structures (his domus and agrios) play out across differing regions of Europe. For Hodder 'symbolic structural change.... has to be appropriate within a given set of economic and social structures and it usually has practical effects which have to be taken into account' (Hodder 1990: 278). Hodder's account is influenced by the sociology of Anthony Giddens. Central to Giddens' thinking was the idea of the 'duality of structure'; in which structures emerge from human action and are also the medium of action. Giddens' sought to find a rapprochement between fine-grained studies of symbolic interactionism and broader functionalist accounts within sociology.

Both Kristiansen's account of the European Bronze Age and Hodder's account of the European Neolithic are united by the sense that the various scales operate at different registers. I argue that these registers serve to perpetuate ontological distinctions between the material and the social. Indeed the ontological distinction between these scales is made more apparent by Hodder's statement that the macroscale and microscale are incommensurate (Hodder 1999: 130).

In Kristiansen's account the large scale circulation of materials remains distinct from the smaller scale regional societies; the two meet in dialectical terms. In Hodder's account, based on Giddens, the contextual and detailed material differences are the outcomes of broader symbolic structures; again the material and the symbolic are kept as distinct entities. There is a problem then in that both processual/macroscale and contextual/microscale approaches assume that geographic scale involves hierarchical

divisions. In tandem with this the distinctions in scale perpetuates an *a priori* ontological division of the world.

An alternative to such approaches come from the field of Science and Technology Studies (STS). For example, Callon and Latour (1981) argue that the differences between macroscales and microscales are an illusion. Actors are instead treated as isomorphic, whether acting at a grand or local scale we are still dealing with the scale of human action. Differences in agency, and the power and scale at which people act, occurs due to the enrolment of nonhuman/material actants to exercise agency at greater or lesser distances. For example, Latour (1987: 232-234) argues that the magnified scale of western science exists since scientists draw together the results of scientific exploration and analysis in 'centres of calculation' consisting of maps, tables and charts which then enable them to predicatively exercise power at greater and more magnified scales.

Such an approach to scale assumes no ontological distinction between the material and the social, rather our focus of analysis is on the mutual engagement between human and non-human actants. We are no longer required to explain the material in terms of the social, or the social in terms of the material, as occurs with the ontologically hierarchical divisions of scale outlined above. I now want to pursue this 'flat' approach to scale through the analysis of artefacts of a small physical scale, the miniature cups of the British and Irish Early Bronze Age.

Introducing Early Bronze Age miniature cups

The miniature cups of the British Early Bronze Age were first classified in the early nineteenth century, by the antiquarians Colt Hoare and Cunnington. Colt Hoare and Cunnington's barrow excavations in the counties of Dorset and Wiltshire, southern England produced more than 20 examples. Although they were first defined in southern England, the distribution of miniature cups extends to northern England, Scotland, Ireland and Wales. Colt Hoare (1812: 25) initially described them as incense cups 'we frequently find them perforated on the sides and one of them in the bottom, like a cullender [sieve], which circumstances induces me to think that they were filled with balsams and precious ointments, and suspended over the funeral pile'. These miniature vessels are sometimes found beside, or sometimes inside, larger pots and are consequently also known as 'accessory vessels'. In order to avoid these loaded terms, I prefer to use the neutral term '*miniature cup*'.

My discussion of miniature cups derives from Longworth's discussion (1983, 1984) and from Annable and Simpson's guide catalogue to the Devizes Museum collection (1964) as well as first hand study in Salisbury and Devizes Museums. On the basis of the dates from Wessex dagger graves, with which they are associated miniature cups are likely to date from the range of c. 1950-1550 cal BC (Needham et. al. 2006: 60);

Miniature cups have confounded easy interpretation. They are generally highly decorated, and often perforated, either with small holes or with extensive open slashes in their sides (Fig. 1). Because of their perforations early researchers such as Richard Colt Hoare labelled them as 'incense cups', while their common association with other larger vessels has provided them with the designation, accessory cup. Most interpretations to date have focused on their functionality.

Here I want to focus on the production and decoration of these vessels as a form of mnemonic practice, a technology of

remembrance. In terms of production, the pots are generally quite coarsely tempered, and are typically formed as pinch pots or as small coil built pots. Ten of the Scottish examples examined by Alex Gibson (2003) were wasters, exhibiting spalling, cracking or distortion, while one example from Wiltshire examined by the author also exhibited spalling. This is likely to have occurred if the pots are hastily made, and given insufficient time to dry prior to being fired. The hasty production of these artefacts is witnessed by the fact that many of the perforations were made in wet clay, as observed by the author in several examples in the Salisbury collections, and as noted by Kavanagh (1977) for the Irish examples.

In terms of form, the pots exhibit great variety; Ian Longworth's (1984) typological analysis of miniature cups offers 11 different types, some with up to 7 subvariants. The pots are typically highly decorated, however perfection is not necessarily the intention, as several pots exhibit marked imperfections, including the bases of cups from South Ronaldsay, Orkney and Rosshire, Scotland, while others show a degree of improvisation during decoration, such as the examples from Dunbar, Scotland and Wylke, Wiltshire.

Deposition of these pots varies, in Wessex they are generally placed with exotic artefacts and human cremations in the graves of the Wessex culture (Piggott 1938; Gerloff 1975); in other regions of the British Isles they often accompany human cremations contained in larger urns, typically food vessels, enlarged food vessels/food vessel urns or collared urns. Importantly, they are almost exclusively associated with cremation burials.

Decoratively these miniature cups often refer to other ceramic forms. For example the miniature cup from Gairneybank, Kinross, Perthshire references a food vessel from the same cemetery, while an example from Charnage Down, Wiltshire has similar symmetrical decorative schemes to the food vessel it accompanies. The form of miniature vessels underlines this point, as many refer to other larger ceramic forms, such as food vessels or collared urns (Gibson 2004; Kavanagh 1977; Longworth 1984).

Miniature cups, by their size and decoration, are relational. Their size and role in many Irish, Welsh and Scottish burials accompanying larger vessels illustrates their relational character. Their role in the Wessex burials mainly refers rather to other artefacts and places.

It is evident that miniature cups have relatively short biographies, being made relatively quickly, with some imperfections in decoration, and being fired relatively rapidly. It is quite possible that they accompanied the cremation of the human corpse on the pyre (although admittedly this is difficult to substantiate); it is telling that they are almost exclusively associated with cremation burials. Given their rapid production and deposition, they are likely to have been only viewed by a few individuals other than the potter.

I argue then that these miniature cups offer a means of playing with form and decoration; they act as a nexus for referencing other ceramic traditions, however their diminutive size and perforations preclude their practical use. One of the key aspects of these cups is that they are miniature, generally being sized between 5-6 cm in height, with rim diameters of between 3-5 cm. Psychological accounts of miniaturisation note that miniaturisation affects time perception, concentrating experience (Delong 1983). As the cultural theorist Susan Stewart (1993) observes miniaturisation also offers the human subject the ability to encompass or contain

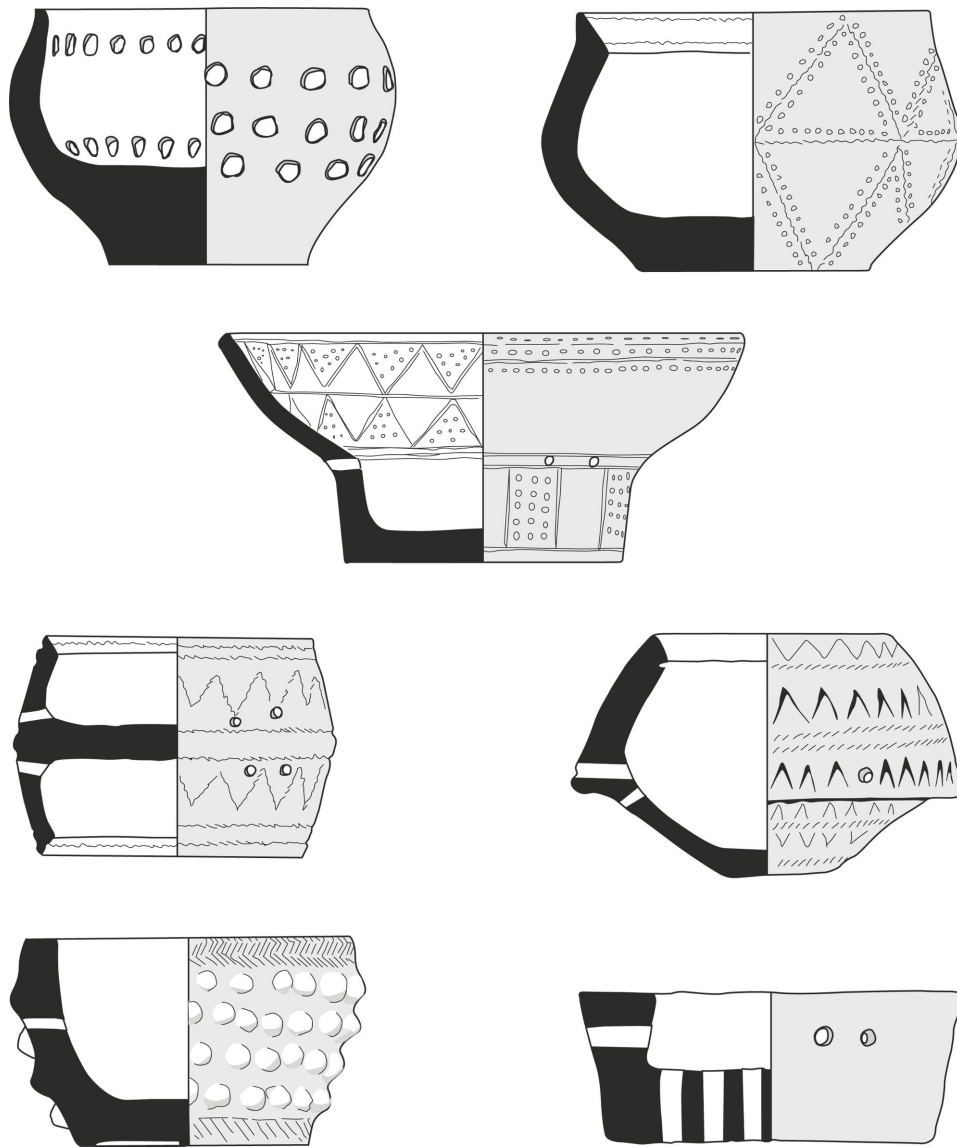


Fig. 1 Varieties of Early Bronze Age miniature cups from the British Isles (illustration by Aaron Watson from an original in Annable & Simpson 1964)

the miniature object. This sense of encompassment is underlined by the intricate decoration of miniature cups, as in some cases all surfaces are covered. In the case of the miniature cups of the Early Bronze Age this sense of containment relates to the way that cups refer to much larger ceramic forms, and the decorative motif found on them. Yet, while the miniature cup can be contained many of them are literally open. Metaphorically they are containers that do not contain. In other cases, where they are placed within larger vessels, they become containers that are contained.

This aspect of miniature cups was very evident from examination of the Salisbury collection; while the recording of decoration on cups involved moving vessels around in the hand, the recording of decoration on the food vessels that accompanied them involved moving around the food vessels; a different form of bodily engagement.

Microcosms

Above all I argue that a key component of miniaturisation is the concentration of experience; as such these miniature cups also serve to concentrate memory. The anthropologist John Mack underlines the significance of miniaturization as a means of distilling or concentrating knowledge; miniature objects

represent the world in microcosm (Mack 2007: 69-74). Mack provides a series of examples of microcosms, such as the wooden divining bowls of the Venda of South Africa. The bowls allow the various forces of the Venda universe to be constrained and controlled within their boundaries; the bowls depict differing social groupings, genders and levels of seniority, and were used for the detection of witchcraft. In Mack's terms the bowl is a 'metaphorical theatre; it contains a condensed world of esoteric reference that is activated in divination to engage mystical and physical challenges' (Mack 2007: 112). We need not look to the esoteric for an example of objects as microcosms; models and maps also achieve the aim of condensing experience in order to manipulate it, as we see for example in the miniaturized Jade and Bamboo carvings of Ming China. These carvings acted as focuses of contemplation for painters and calligraphers, and indeed these miniatures served as templates for garden designs. There is a synergy then between miniature models and gardens and landscapes in the full-scale world (Mack 2007: 88-89). Maps appear to be such mundane objects that we rarely contemplate their function as miniature representations of landscapes, yet from their earliest production they effectively act as microcosms; containers of worlds. Miniature models and maps are therefore mimetic, they draw together knowledge of the real world and serve as mediums for contemplation and manipulation. In Latour's terms miniature

models and maps act as intermediaries that allow knowledge to be arranged and presented synoptically (Latour 1987: 215-255).

Returning to Early Bronze Age miniature cups, experience is yet more concentrated or compressed by the rapid production and deposition of the miniature cups. Each miniature cup acts as a nexus of experience, as their production involves intricate displays of decorative motifs meant to refer to ceramic forms and types of decoration beyond themselves. That miniature cup forms act as displays of decorative technique is underlined by the existence of several parallel cup forms made from exotic substances, such as the precious cups from Rillaton, Cornwall and Ringlemere, Kent, Hove, Sussex and Clandon, Dorset (Needham et. al. 2006). Precious cups have longer-use lives than the miniature cups I have focused on. Analysis by Needham and others shows that many of the cups made of exotic substances, such as amber, jet or gold exhibit evidence for use-wear around the handle, probably relating to suspension and display (Needham et. al. 2006).

The phenomenon of miniaturisation in the British Early Bronze Age extends to other artefact forms, such as the three miniature halberds of gold, copper and amber from Wilsford G8 and Manton, Wiltshire and Hengistbury Head, Dorset. Stuart Needham (2000, 2008) has recently noted that these halberds pendants postdate the British and Irish halberd series. As such, they are inspired by Aunjetitz halberd forms from Central Europe. These halberd pendants are unique to Britain; no parallels (in terms of size) exist in Central Europe. Therefore, these miniature artefacts are deeply mnemonic in nature; they refer to distant places, and to an ancient form of artefact. Further, the substances from which they are produced, gold, copper and amber, similarly refers to distant places.

We can consider the production, use and display of miniature artefacts as articulating different scales in the Early Bronze Age. Artefacts made of exotic substances, such as the precious cups and miniature halberds evidently had a longer use-life. The crafting of these artefacts involved articulating and expressing specialized knowledge concerning the connections between distinct places, substances and forms. The significance of these connections was evident in their material form.

Miniature cups as physical forms are relational; their diminutive size invites comparison to other pottery forms. The decoration of miniature cups is likewise relational and referential. The miniature cups make manifest questions of relationship and connection, while their fleetingly short use-lives and peculiar properties as container that are unable to contain, or as containers that are contained, along with their close association with cremations, speak to questions concerning the fleeting nature of the human life span and the evanescent nature of the human body. Miniature cups, too, articulate connections and relationships, albeit to a lesser degree than the precious cups and halberd pendants discussed above.

Both the miniature cups, precious cups and other miniature artefacts augment and distribute peoples' conceptualization of their social lives in significant ways (Pedersen 2007: 153). The position I am trying to establish here is that these are not mere vehicles for cognition, these things are not 'good to think with' in the sense described by Levi-Strauss; a process in which thoughts and meanings are arbitrarily attached to things or objects. Instead, I am suggesting that these artefacts are treated as active components of thought; thoughts are embodied in their fabric. These miniature

artefacts act as devices for embodying ideas concerning scale, distance, connection and relationship.

In sum, miniaturization in the Early Bronze Age provides a way of concentrating diverse experiences and distilling or articulating memory. It is significant that craft specialists orchestrate remembrance, as the substances and forms that artefacts take seem to be of signal importance. The crafting of miniature artefacts involves articulating specialized knowledge concerning the connections between distinct places, substances and forms. In this regard miniature artefacts act as powerful socio-cognitive technologies, in which the skills and knowledge of certain individuals are valued above those of others. I have argued then that the miniaturization of certain Early Bronze Age artefacts offers a device for concentrating and articulating experience. Furthermore I argue that miniature artefacts were deliberately produced in order to articulate and reference distant connections. Miniature artefacts therefore articulated the Early Bronze Age experience of scale.

Conclusion: matters of scale

I now want to return to the discussion of geographical scale that I opened this paper with. My discussion will focus upon Kristian Kristiansen as his work is especially pertinent to my analysis of the Early Bronze Age. Kristiansen posits the existence of a series of regional groupings, components of a network based on the circulation of exotic goods, such as copper, tin and amber (Kristiansen 1998). As noted above, his discussion of scale perpetuates familiar ontological distinctions. The task then becomes explaining the material in terms of the social. It is for this reason we see alternately a discussion of travelling chiefs connecting the networks or the discussion of a pan-Euro-Asian cosmological institution. As we might expect, a significant element that becomes lost in this discussion is the ontological nature of the materials that compose these networks. There is obviously no doubt that people travelled across Bronze Age Europe, and little doubt that these materials were perceived as exotic, special or cosmologically derived (Helms 1988; Kristiansen 1998; Needham 2000).

Indeed, Needham (2006) posits a series of networks of interaction for the Southern English Early Bronze Age (Fig. 2), with an English Channel network associated with precious cups and slotted miniature cups conjoining communities in Northern France and southern England, and a further network associated with Aldbourne cups and grape cups (specialized forms of miniature cup) centring on Wiltshire. Kristiansen and Larsson (2005: 120-121) emphasize precisely this network of interaction, noting significant connections between the Wessex-Brittany sphere of interaction, and Central Europe (the Aunjetitz cultural groups).

If we take the perspective that materials and people act in concert in heterogeneous networks or assemblages (Callon 1991: 136) in which materials translate or substitute for the actions of people (Latour 1991: 104-105) we no longer need to describe Bronze Age Europe in terms of material infrastructure and symbolic superstructure. Instead we simply examine the way in which materials are mobilized to articulate social relationships in different regional locations. My analysis of miniature artefacts in the British and Irish Early Bronze Age offers just such an interpretation of how social relationships are articulated in practice. Scale is made manifest in materials; the significance of scale and the connection of communities is translated into substance. Rather than conveying complex myth cycles from

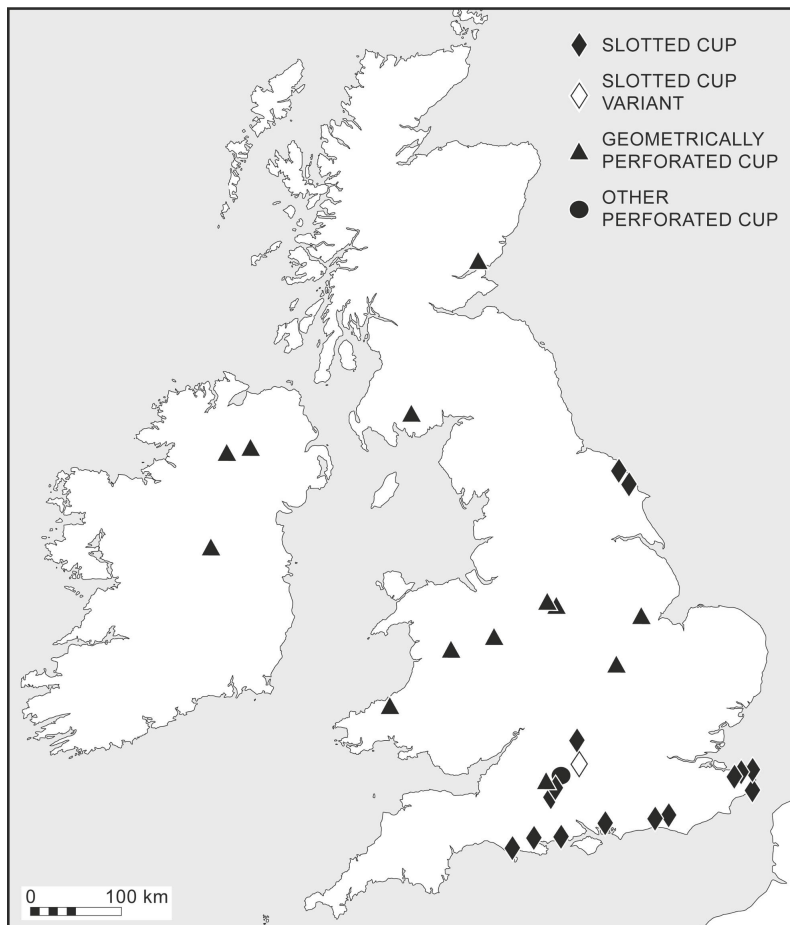


Fig. 2 The distribution of slotted miniature cups of the Early Bronze Age (illustration by Aaron Watson from an original in Needham, Parfitt & Varndell 2006).

one region to another the physical substances circulated evoke or embody the significance of other places in material form. This is surely the significance of the miniature halberds found in Southern England, they embody other places in their form and substance. Indeed their form, peculiar to Britain in this period, embodies the very idea of the exotic.

If we consider Latour's point that 'technology is society made durable' we no longer need to explain the circulation of goods in terms of distant myth cycles (Kristiansen 2005; Kristiansen & Larsson 2005), the goods themselves substitute and translate the significance of other places. What this suggests is that the hierarchy of scale adopted by European archaeologists is itself an illusion. Further, it is an illusion that creates its own imperatives. If instead we consider the possibility that the microstructure of society is synonymous with the macrostructure, and that both are embodied in material form in the artefacts produced by people the task then becomes explaining how assemblages of artefacts and people articulate together and how artefacts are made to produce scale.

Returning to the Bronze Age, and given the foregoing argument that the social is enmeshed in the material, although craftspeople are a critical element of Kristiansen and Larsson's argument (2005: 52-3) greater emphasis must be placed on the kinds of relationships crafted by people in prehistory. Joakim Goldhahn (2007) has recently argued a similar point for the Scandinavian Bronze Age. He argues that the craftsperson simultaneously acted as ritual specialist; the production of bronze was bound up with the production of rock art, and both were related to wider

cosmological knowledge. Relationships of cosmology and scale alike are literally crafted in material form.

To conclude, this paper was originally conceived as a critical enquiry, and engagement with, Kristian Kristiansen's concept of scale. I continue to find the notions of scale adopted by Kristiansen and others problematic. Instead the perspective adopted here, and the analysis of the role of miniature artefacts in the crafting of relationships of scale, allow us to consider the way in which scales can be collapsed; scale operates at the level of the human, and it is human interaction with the material world that produces scale. Importantly I also suggest that close analysis of artefacts offers a signally important method for understanding scale. If anything, the perspective adopted here offers a refinement of the framework devised by Kristiansen and Larsson (2005), as it allows us, as prehistorians, to envisage in greater detail the close connections fostered between communities across Bronze Age Europe.

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DRINKING IN TIMES OF CRISIS: ALCOHOL AND SOCIAL CHANGE IN LATE BRONZE AGE ITALY

Cristiano Iaia

Abstract: In Italian scholarship to date, little effort has been devoted to the study of formalized drinking practices in complex prehistoric societies, a crucial moment in social life. In the light of recent discoveries in the archaeobotanical field, this paper uses a comparative approach to reassess some examples from Bronze Age contexts, which have been selected for the quality of the data available. The case studies are located in Emilia and Calabria, in northern and southern Italy respectively. Special attention is paid to the formation of new material manifestations linked to ceremonial drinking customs in different areas of the peninsula during the recent Bronze Age (1300-1150 BC), a period of rapid socio-economic change and broad geo-political crisis. How this connects with funerary practices, especially with cremation, and with the commensality rituals of new elites, is also discussed.

Keywords: Late Bronze Age, Terramare culture, drinking services, commensality rituals, alcohol consumption, first wine in Italy, fine ceramics of Aegean inspiration

Introduction

The aim of this paper¹ is to reassess a subject which has been on the margins of Italian debates on late prehistory. In this field, the recent agenda of Italian scholarship has been monopolized by issues such as the use of prestige drinking vessels in the framework of Iron Age trade and lifestyles of the elite. Moreover, there is no agreement about the chronology of the introduction of cultivated grapes in Italy. Although several Classical archaeologists argue for an introduction of most cultivars and techniques by the Greek colonists in the eighth century BC (Zifferero 2012), some scholars have recently emphasized the increasing evidence for local domestication of *vitis vinifera* in Etruria from at least the late second millennium BC, or the Final Bronze Age (Zanini 1997; Delpino 2007). The argument was strengthened when archaeobotany experts presented remarkable new data regarding an incipient domestication of *vitis vinifera* in Italy since the initial Middle Bronze Age, about 1600-1500 BC (Aranguren, Perazzi 2007; Aranguren et al. 2007). On the other hand, it cannot be ruled out that beer and mead were amongst the fermented beverages employed in Bronze Age Italy, since beer is directly documented, at least in the northern part of the peninsula, from the Early Iron Age onwards (Gambari 2005). This is in accordance with the increasing evidence from northern-central Europe going back to the Beaker period (Guerra-Doce 2006).

I would call attention to the fact that, although a lack of serious multidisciplinary approaches inhibits progress along this route, some noteworthy traces of ceremonial drinking behaviour, presumably linked to alcohol consumption, have been suggested by the material record since the Bronze Age, and that from a developed phase of the same age it assumes an overall coherence. This urges us to reconsider the more definite and explicit Iron Age evidence on this aspect from the perspective of transformation and change within long-lasting local traditions, rather than as pure innovation from abroad (on this perspective see the seminal piece by Dietler [1990]). The topic will be addressed by comparing two different case studies, one located in northern Italy and the other in southern Italy during the initial Late Bronze Age (Fig. 1).

The chronological focus of the investigation is the phase known as *Bronzo recente* in Italian terminology (recent Bronze Age, henceforth RBA), approximately corresponding to the thirteenth and first half of twelfth century BC, or to *Bronzezeit D* and *Ha A1* in central European terms (Damiani 2010:417).

Drinking practices and rituals in the late Terramare culture

The first case concerns the so-called Terramare culture, an important territorial entity whose core area is in the southern Po Plain, with extensions in the Apennine mountains and in the area immediately north of the river Po, during the middle and late Bronze Age (Bernabò Brea et al. 1997; Cardarelli 2010).

According to a long-established scholarly tradition, the Terramare villages were remarkable habitation sites located on the Po plain, with a typical layout consisting of a quadrangular area of variable size, which was surrounded by an embankment and a ditch. The most impressive features of this culture are the stability and long duration of the settlements, a dense arrangement of houses and a complex infrastructural management of the surrounding agricultural areas (Cardarelli 1997a, 1997b, 2010). The subsistence of the Terramare communities was largely based on a considerable production of cereals, integrated with the rearing of dominant sheep/goats and pigs, with few cattle (Mercuri et al. 2006:55). It also included a significant component of fruits, especially the cornelian cherry, a wild fruit that is appropriate for flavouring or producing fermented beverages (Accorsi et al. 2004). Thus, both the agricultural potentiality and the organizational capacity for obtaining a surplus in order to produce alcoholic beverages were in place. At the Montale village (see Fig. 1) the archaeobotanical record from the beginning of the RBA (around 1300-1250 BC) saw a reduction in cornelian cherry, while there was a substantial increase of *vitis vinifera*, which became the predominant fruit (Mercuri et al. 2006: 55). From this evidence, despite the well known difficulties of discerning *vitis vinifera silvestris* from the cultivated forms, it is tempting to recognize an increasing importance of the cultivation of grapes. Moreover, these data match very well with the recent discovery at San Lorenzo a Greve in northern Tuscany (see Fig. 1), not far from the Terramare area, of a wood-framed silo of the initial Middle Bronze Age that contained over a thousand grapevine pips, mostly belonging to

¹ A first version of the text was presented at the sixteenth Meeting of the European Association of Archaeologists, held at The Hague in September 2010.

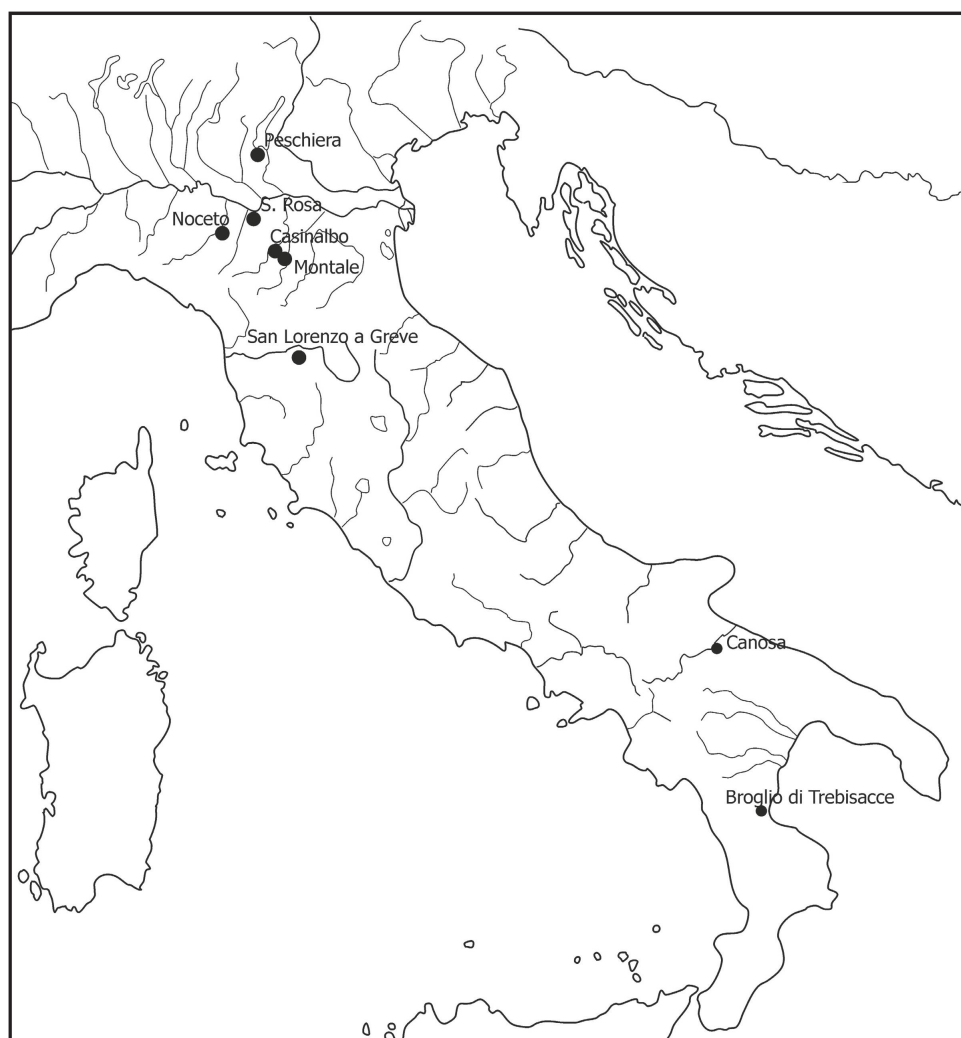


Fig. 1 Location in Italy of the main sites mentioned in the text.

the cultivated subspecies or to intermediate forms; these were associated with hundreds of cornelian cherry stones, confirming a relationship between the employment of the two genera in an early and pioneering stage of grape domestication (Aranguren & Perazzi 2007).

The first Terramare example to be examined briefly in relation to the material configuration of drinking practices is the so-called 'cult cistern' found at Noceto (see Fig. 1), in the province of Parma (Bernabò Brea & Cremaschi 2009), which dates to phase 2b of the middle Bronze Age (1500 – 1450 BC). It is a great cavity framed by a massive wood structure, which from the outset was filled with water. During its lifetime, which seems to have been relatively brief, the cistern was subject to periodic intentional deposition of hundreds of objects into the water, including several pottery vessels regularly placed near the walls, together with wood implements linked to agrarian activities, such as ploughs. The more frequently occurring forms in fine pottery are cups and bowls of different shapes and sizes linked to individual consumption, followed by coarse jars and vessels for dispensing food (Fig. 2). Particularly significant to this study, albeit a negative feature, is the limited functional efficiency of drinking vessels: in fact they consist of cups with massive handles, topped by an animal-shaped appendage (Fig. 2:6-8) that renders difficult the act of draw-off and drinking. It should also be noted that the functional characteristics of the cistern suggest that it was probably connected

with broadly domestic rituals, maybe relating to fertility, and with the consumption of water rather than with alcoholic beverages.

The more generic form of the Noceto drinking vessels were replaced in the RBA with locally made ceramic cup forms with raised handles (Fig. 3A; Fig. 4:8-15), which represent a morphological evolution within the Terramare material repertoire. Transformation into a more standardized and practical drinking vessel seems to have been a complex matter of hybridization and emulation, shared by most communities of the eastern side of Italy around 1300 – 1150 BC (Damiani 2010). It involved a merging between models derived from bronze cups of the central European tradition (compare for instance the 'Friedrichsruhe' cups: Jacobi 1995, taf. 1-2) and south Italian wheel-turned vessels (Bettelli 2002; Damiani 2010). In particular, several types of earthenware pottery cups from the Terramare area reveal a process of skeuomorphic imitation of sheet bronze vessel decoration, in some cases further indicated by the addition of bronze bosses to the pottery surface (Fig. 3A.3).

A significant find, dating to the RBA, that allows us to connect the abovementioned transformation of material culture to a rise of alcohol consumption in an elite context is the bronze strainer cup (Fig. 3B) from the lakeside settlement of Peschiera del Garda (see Fig. 1) (Müller-Karpe 1959: taf. 105.2). Comparable examples have been discovered in exceptionally wealthy burials of the thirteenth - twelfth centuries BC in Central Europe, such

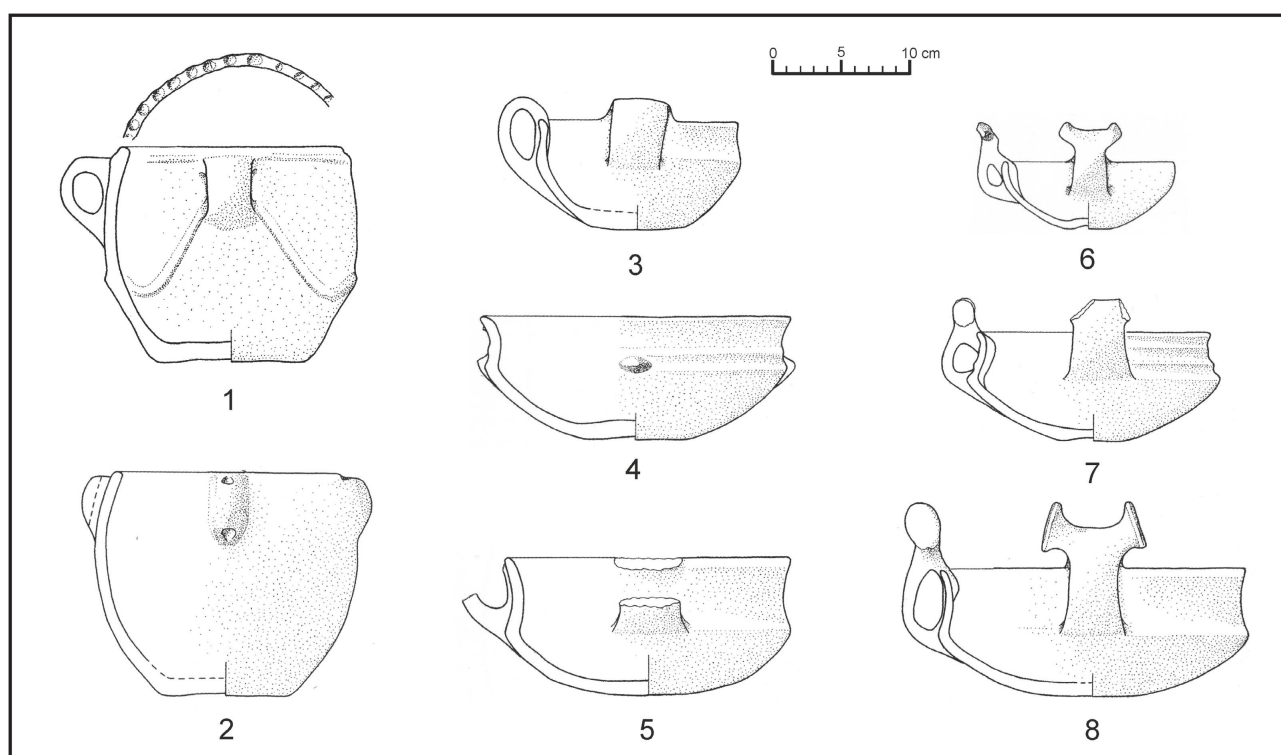


Fig. 2 Noceto (prov. Parma). Main vessel forms from the 'cult cistern' of the middle Bronze Age. Source: Bernabò Brea, Cremaschi 2009, with modifications.

as Hart and der Halz (Müller-Karpe 1955). The connection of this vessel shape with alcohol, especially with the act of filtering the impurities out of wine, beer or mead, is widely recognized.

Returning to the Terramare contexts, among the many remarkable excavations of the last 20 years in Emilia is the huge village of Santa Rosa di Poviglio (see Fig. 1), located along the river Po, near Reggio Emilia. At the beginning of the RBA a wide enclosure of 5 hectares, the so-called 'Great Village', was added to the minor one going back to the Middle Bronze Age (Bernabò Brea & Cremaschi 2004). In the final phase of the RBA, immediately prior to the abandonment of the site, about four great rectangular houses, presumably made of beams and planks, were destroyed by fire along with their contents. The rich artefact assemblages were concentrated near or within the debris of the walls, indicating a partial placement on shelves (Fig. 5). Such an extraordinary find is a rare opportunity to analyse the formal aspects of domestic activities in a Bronze Age social context.

The careful analysis of the spatial distribution of finds throughout the houses carried out by P.E. Bianchi provides a good basis for our assessment (Bianchi 2004). They comprise three main categories of artefacts: assemblages of pottery vessels, several pottery loom-weights indicating the presence of looms and cultic figurines representing horses (Fig. 4). The c.45 figurines of horses are scattered throughout the area in variable concentrations, in some instances found near pottery wheels that could complement miniature wagons made of perishable material (Fig. 4:18,19; Fig. 5), according to the well-known European iconography of the sun transported by a horse. Ritual objects, such as figurines, miniature vessels and so on, are widespread in the Terramare domestic contexts (Bettelli 1997), to the point that an interpretation of the Santa Rosa buildings as specialized cultic structures would not be

credible. On the contrary, an intermingling between everyday and ritual practices appears to be a specific character of this example.

Of note here is the fact that ceramic assemblages found within each house show an overall uniformity. Despite a wide range of containers for food storage and consumption, the majority of vessels are linked to drinking, among which cups with high handles of the kind noted above are predominant (Fig. 4:8-15), sometimes numbering up to several dozens for a single house. They are accompanied by only a few vessels for pouring liquids, such as spouted jars. Richly ornamented biconical jars of different sizes, some of huge dimensions, played a significant role (Fig. 4:16, 17). Each house had at least one or two such vessels, which could have contained many litres of liquid, thus demonstrating a great capacity for storing liquids.

This example is a rare instance of the close spatial proximity between elements linked to domestic and everyday activities (coarse ware containers, looms etc.) such as vessel sets for formalized banqueting and cultic paraphernalia (see Fig. 5): as a consequence, it is possible to suggest that these apparently different spheres of activity were integrated in a whole productive and ritual framework, a privileged household. Thus, in the last phase of the RBA at Santa Rosa banqueting activities centred on drinking were managed by social units, presumably family groups of apparently equal structure and economic or political roles, as demonstrated by the absence of distinctive drinking gear. These families evidently had the capacity to control resources and manufacturing activities such as wine production and weaving. In addition, the systematic occurrence of looms suggests a noteworthy role for the female component, at least from the point of view of production, though presumably even in the management of sacred things. From the Early Iron Age onwards, women also

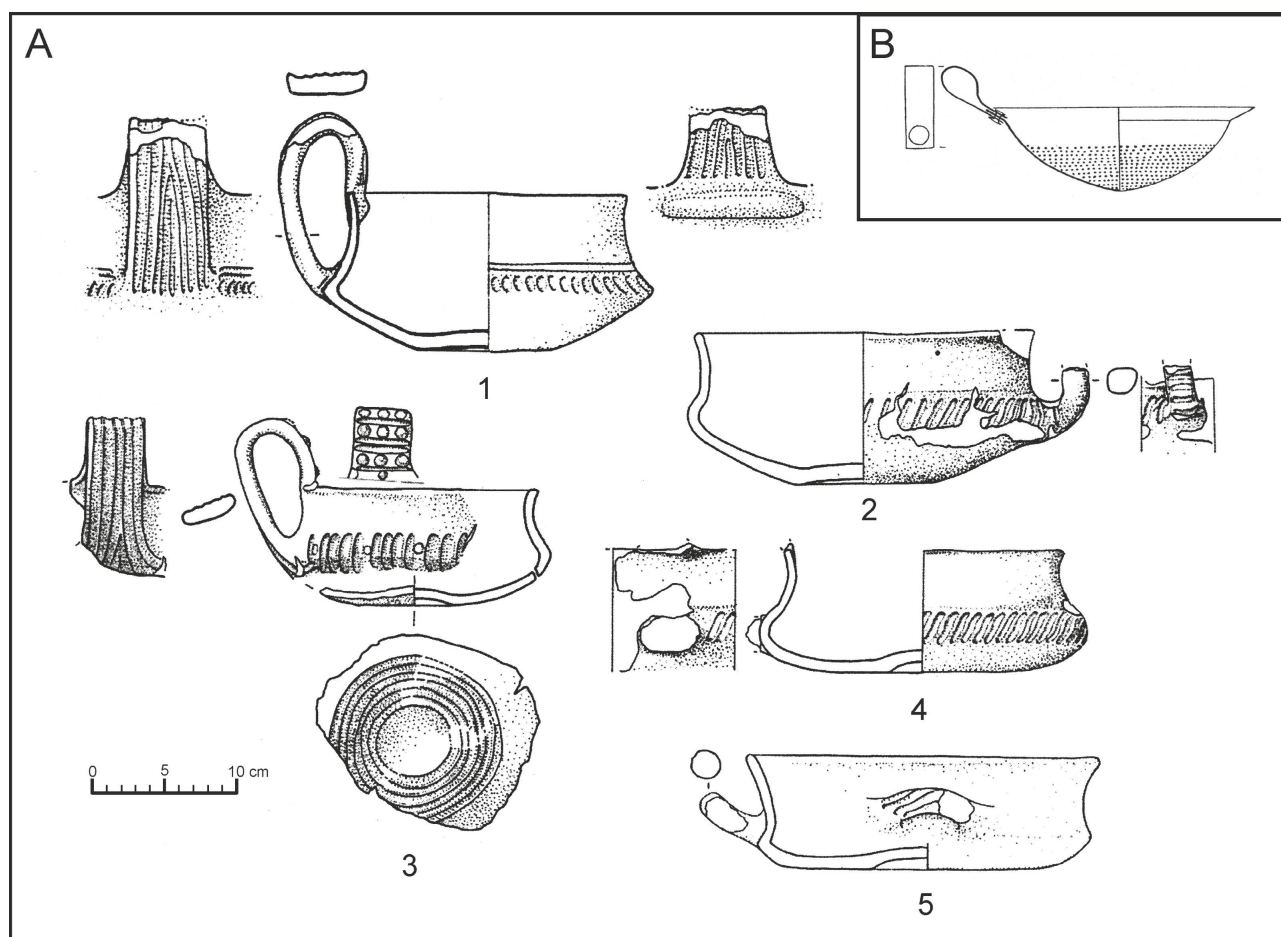


Fig. 3 A: Casinalbo (Formigine, prov. Modena), drinking cups used as containers for ashes in the recent Bronze Age cemetery (Source: Cardarelli, Pellacani 2004, with modifications).
B: Peschiera del Garda (Verona). Bronze strainer cup from the lake-side settlement, recent Bronze Age (Source: Müller-Karpe 1959, with modifications). No scale.

played an important role in the dispensing and consumption of alcoholic beverages (Iaia forthcoming), and the question arises whether this phenomenon must be pre-dated to the initial Late Bronze Age, in contrast to the traditional view of drinking and feasting as a medium of male solidarity.

The importance of drinking ceremonies is similarly apparent from burial evidence of the same Terramare culture. By far the most thoroughly excavated and discussed archaeological context in this field is the necropolis of Casinalbo, a vast cemetery of up to 600 cremation burials (Cardarelli, Pellacani 2004; Cardarelli et al. 2006). Since the MBA 2 the cremation ritual was predominant in the core area of the Terramare culture. In the RBA the burials were characterized by a strong heterogeneity in the use of different kinds of ossuaries, which most frequently are vases for carrying, dispensing or consuming liquids. A number of burials contain drinking cups of the type recorded at Santa Rosa di Poviglio, also used as ossuaries (a sample is illustrated in Fig. 3A). Even in the nearly contemporary cemetery of Pozzillo near Canosa, in southern Italy (Lo Porto 2004), RBA cremation burials regularly assume the form of simple individual drinking sets, comprising biconical ossuaries and the same cups with high handles that the Terramare culture employed as covers. I think this is the best indication of the emergence of formal drinking as a powerful means of communication: in the material symbolism of cremation,

libations and the burning of the dead are metaphorically equated with sacrificial offerings.

Another aspect of the Casinalbo cemetery yielded much information on ritual practices during the RBA. These involved complex actions in which burned objects, especially metal weapons, ornaments and ceramics, were fragmented and spread around the burials (Cardarelli et al. 2006). In one of these dispersion areas, many fragmented vessels, especially small jars and drinking cups (Fig. 6.2), had been scattered with increasing intensity around a great biconical jar of the same type as that from Santa Rosa di Poviglio (Fig. 6.1). As Cardarelli pointed out, in the course of those ritual actions, elite groups also sacrificed the main symbols of their authority and social rank, in particular swords, daggers and ornaments, all elements that are nearly totally absent in the grave assemblages. Through these destructive acts the community seems particularly concerned with denying political and economic differentiation, a tendency fully confirmed by the homogeneous burial record. At the same time, we see here a further connection between drinking practices and cremation rituals.

Thus, judging from the evidence so far available, in the core of the Terramare culture the consumption of alcohol seems to have

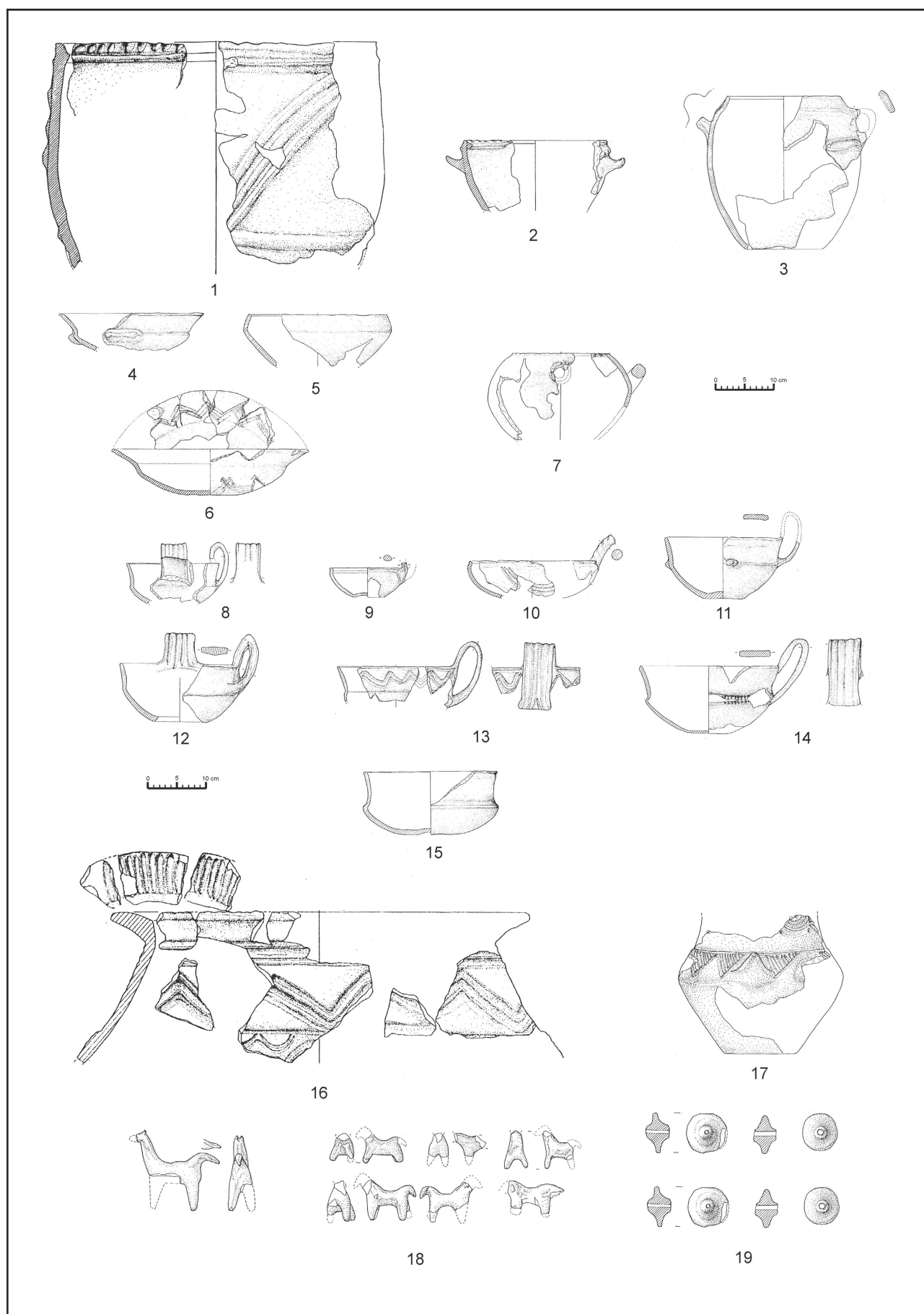


Fig. 4 Santa Rosa (Fodico di Poviglio, prov. Reggio Emilia). Reconstruction of an ideal ceramic assemblage from the recent Bronze Age houses. Source: Bianchi 2004, with modifications.

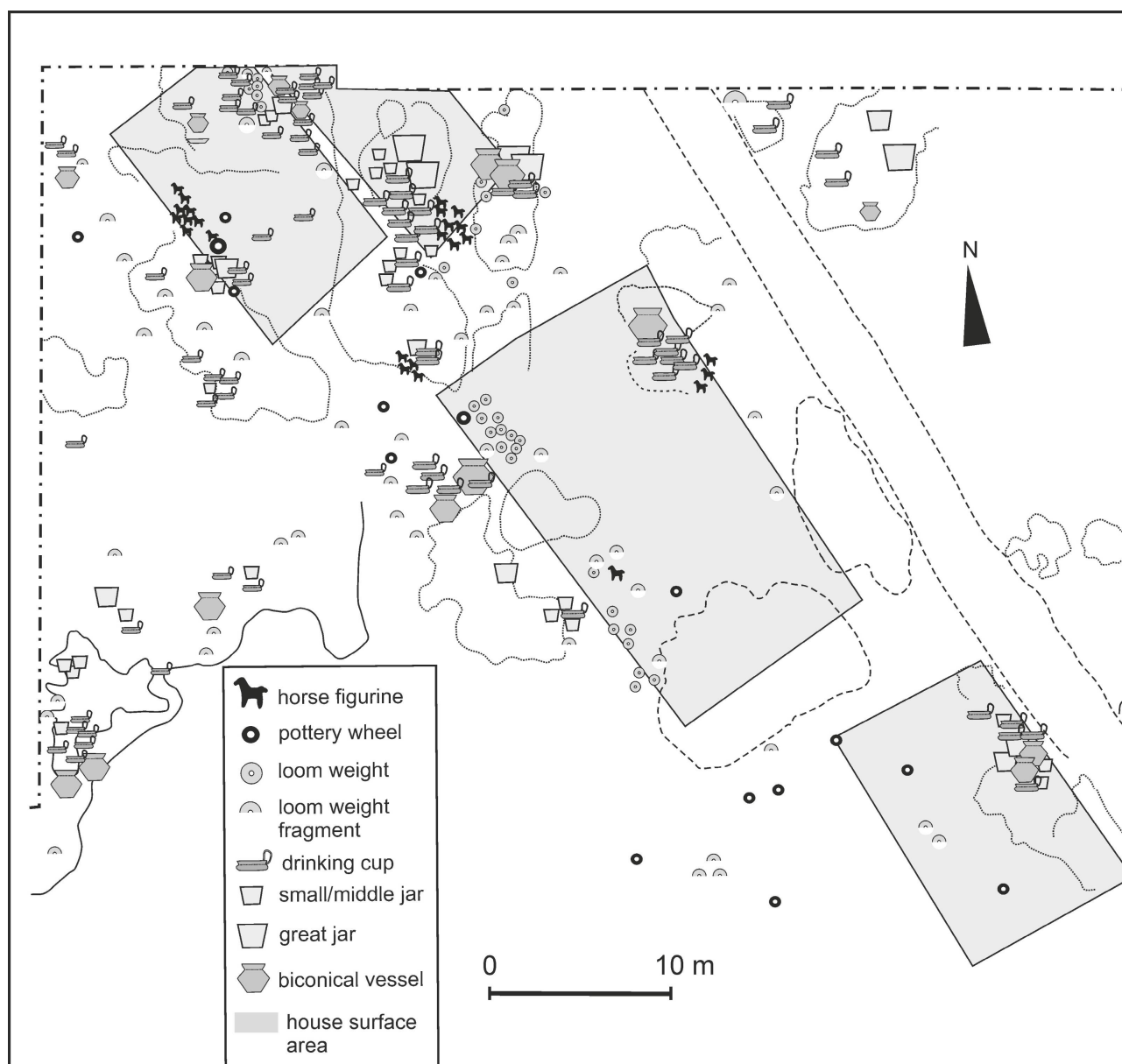


Fig. 5 Santa Rosa (Fodico di Poviglio, prov. Reggio Emilia). Distribution of pottery items in the upper levels of the 'Great Village', recent Bronze Age 2. Square spaces in grey: reconstruction of the surface areas of houses. Source: data from Bianchi 2004, with modifications.

developed within the framework of local customs of domestic commensality and funerary rituals.

The adoption of Aegean-style drinking in southern Italy

Another example from the Italian Bronze Age in which clear evidence of ceremonial drinking customs have been recognized is the settlement of Broglio di Trebisacce, in the northern part of Ionian Calabria known as Sibaritide (Fig. 1).

Broglio di Trebisacce is one of a group of large settlements established on naturally defended hill-tops or plateaux, not far from the sea, that flourished between the Middle Bronze Age and the Early Iron Age, before being abandoned as a consequence of Greek colonization (Peroni & Trucco 1994; Peroni 1994; Vanzetti 2000). In respect to the RBA evidence of Broglio, the former director of excavations, R. Peroni, argued for the emergence of

an elite who monopolized the control over important aspects of subsistence, craft production and trade (Peroni 1994). This site shows strong connections with the Mycenaeans, particularly visible in the local manufacture of different classes of wheel-thrown fine pottery imitating that of the Aegean, or inspired by them, the so-called 'Italo-Mycenaean' painted pottery, the 'Pseudomynian grey-ware' and the wheel-thrown pithoi of Aegean inspiration (Bettelli 2002). All these classes are associated with a quantitatively predominant earthenware pottery of local type.

The fundamental feature of the RBA at Broglio is the so-called 'central house', a building placed on an artificial terrace along the slopes of the settlement hill. It has been assigned to a high-status group inhabiting the higher part of the plateaux (Peroni 1994; Peroni et al. 2004) and dates to the RBA 2 or first half of the twelfth century BC (Jung 2006: 417).

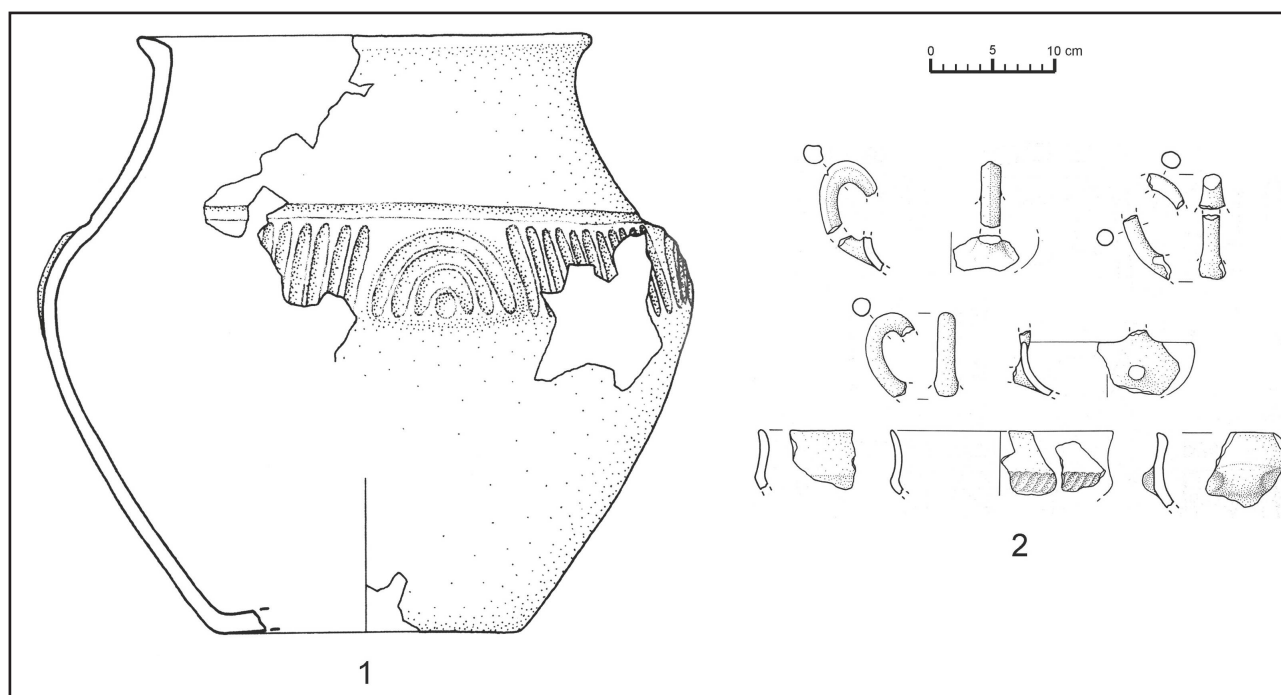


Fig. 6 Casinalbo (Formigine, prov. Modena). Evidence for sacrificial drinking activities around the cremation burials, recent Bronze Age 2: great biconical jar (n.1) and fragments of cups (n. 2). Source: Cardarelli et al. 2006, with modifications.

Although still substantially isolated, this archaeological complex plays an important role within the present discussion. Through a detailed study carried out on its stratigraphic and artefactual characteristics, M.A. Castagna (Castagna 2004) was able to reconstruct the presence of a large pottery set, clearly of ceremonial significance, which comprised four different subsets or services with a majority of cups and bowls and very few jugs and liquid containers. On the basis of this evaluation, it was calculated that the probable number of individuals involved was 24. Each subset pertains to a different fine pottery class that includes earthenware of local type, but especially Pseudomynian grey-ware (Fig. 7) and Italo-Mycenaean ware of LH IIIC date (Jung 2006). Furthermore, the quantitative and morphological analysis demonstrated the existence, within each service, of a series of cups and bowls formed into a small, a medium and a wide size, suggesting some distinctions in the quantity, and perhaps quality, of the beverages that were served during the ceremony. This could possibly be conceived in accordance with different and hierarchically organized social roles.

It is also to be considered that the fine ceramics of the 'central house' represent the vast majority of pottery of Aegean style found at Broglio di Trebisacce, so that the elite character of the assemblage appears to be a certain assumption.

Space does not allow for an exploration of all the implications of this example. Data on the cultivation of *vitis vinifera* are lacking for this area, but the overall picture of subsistence, including the cultivation of olive in the framework of Mediterranean crops, is not in contradiction with a local production of wine (Fiorentino et al. 2004: 221). On the other hand, the ceremonial drinking services of the 'central house' leave open the possibility of a contextual transmission of specifically Mycenaean ritual practices (Jung 2006), technological innovations in pottery manufacture and the importation of 'exotic' wine from the eastern Mediterranean.

Final remarks

By comparing these two case studies it has been my intention briefly to underline several points.

A first basic component is inherent in the inter-cultural climate of the Italian RBA: both cultural groupings made use of models of drinking vessels of foreign origin, but the intensity of borrowing shows great differences. Broad emulation of the central European sheet bronze production (not yet documented in this area except for the Peschiera strainer cup) characterizes the Terramare example, while the direct introduction of Aegean customs, formal models and technology is typical of the southern groups. Also common to both situations is the elaboration of drinking patterns technically focused on great quantities of similar cups with high handles, used to distribute different rations of liquids to substantial groups of people, who were probably members of a corporate group, a family or a clan.

The Terramare drinking customs show stronger links to a broader ritual and religious context going back to the Middle Bronze Age, where it is also well-integrated in the domestic sphere of the households. This is consistent with the 'strongly inclusive character' (Cardarelli 2010) of the necropolises and with the apparently 'egalitarian' configuration of the community ideology in the burial record. However, this is only one part of the picture. As it was observed at Casinalbo, drinking ceremonies, in the form of libations, may have been part of complex ritual sequences involving the destruction of status symbols (especially swords), possibly an assertion of power and political dominance. In fact, evidence from the same cultural entity hints at a dynamic and competitive reality, particularly in the last period of existence of the Terramare settlements: see for instance the complex ranking of military roles indicated by the different weapon categories (cuirasses, swords, daggers, lances, javelins) in the RBA 2 votive

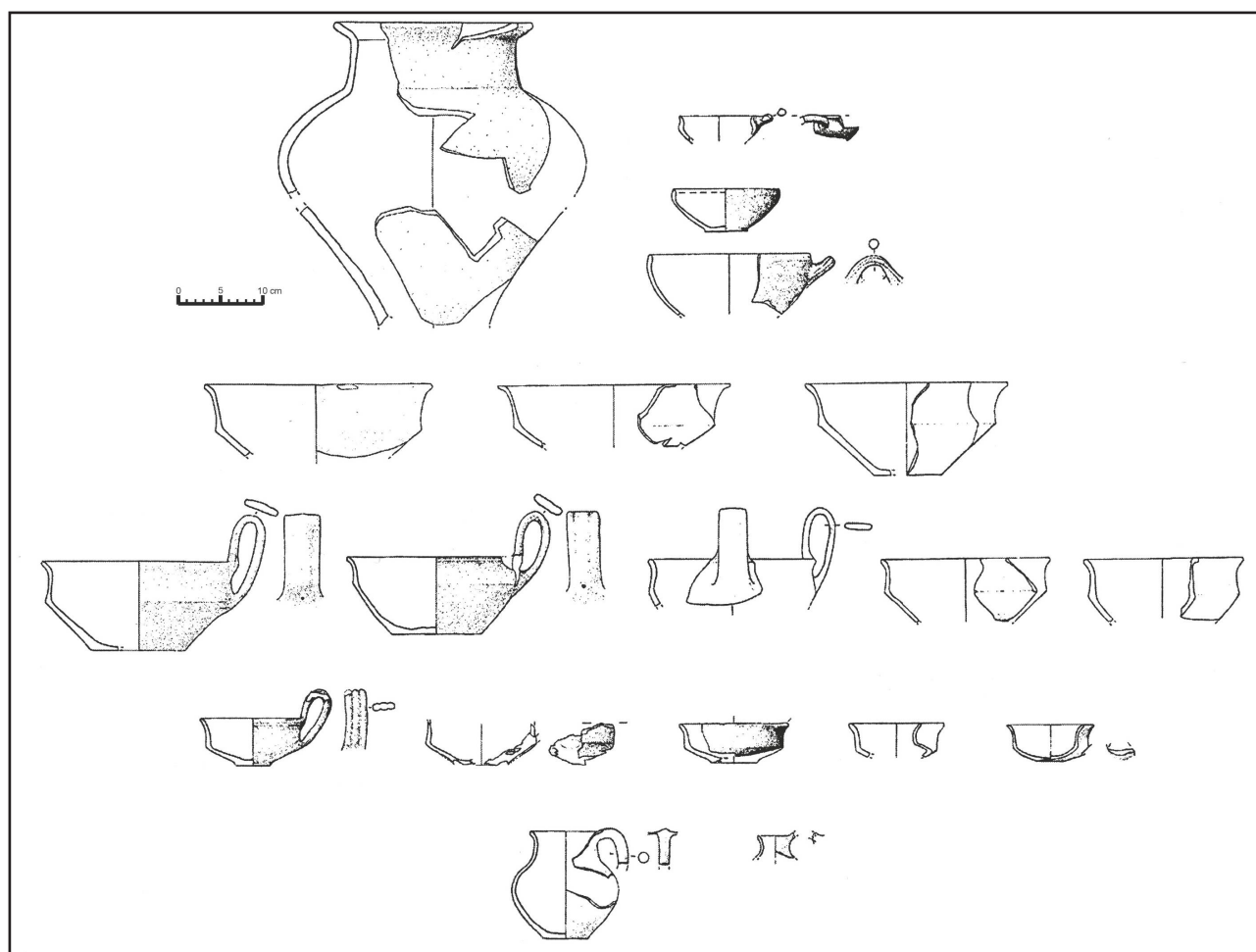


Fig. 7 Broglio di Trebisacce (prov. Cosenza). Reconstruction of a drinking service in 'Grey Pseudomynian Ware' from the 'central house', recent Bronze Age 2. Source: Castagna 2004, with modifications.

deposition of Pila del Brancòn in south-western Veneto (Salzani 1998; Cupitò, Leonardi 2005).

In contrast to the Santa Rosa di Poviglio example, the technologically innovative drinking sets found within the 'central house' at Broglio di Trebisacce are symbolic of a separate sphere of production and consumption with a remarkably exotic flavour, while not showing particular links to cult and religion. These fine ceramics and the attached rituals overtly assume, to use Michael Dietler's definition, the role of a typical 'diacritical' symbol of a distinct social stratum (Dietler 1990), which can be imagined as internally subdivided into reciprocally dependent roles possibly of a patron-client character (Peroni 1994). In both cases an analogous mechanism, commensality as a way of reinforcing socio-economic relationships, is likely, but the final results are very different: a kind of 'collectivist' and egalitarian ethos versus an overt ideology of difference.

The chronological position of both examples, particularly the relatively short period of RBA 2, is of some interest as well. This period saw the establishment of a new era in Mediterranean history, marked by vast geo-political changes (the collapse of the Mycenaean network) and a sense of instability due to increased warfare (e.g. Maran 2010). Even in the Terramare area around 1200-1150 BC a phase of deep crisis and transformation of communities took place which, after witnessing a rapid increase

of hierarchical features and economic complexity, ended with a general collapse of the settlement system, possibly due to concurrent reasons such as soil exhaustion, climatic change, excessive population levels and social conflicts (Cardarelli 2010). Conversely, the Sibaritide communities reinforced their own tendency towards continual economic growth, productive diversification and increasing socio-political complexity (Peroni 1994), although within a Mediterranean framework of decline in international contacts.

In conclusion, the first explicit signs of alcohol consumption in material culture appear in Italy in some contemporary contexts, all marked by different but equally accelerating trajectories towards socio-political complexity. Future research should continue exploring the specific economic and social implications of the first wine production and the role this played in the subsequent development of important drinking practices within the indigenous societies of the Final Bronze Age and Early Iron Age.

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THE CULTURE OF THE EARLY IRON AGE IN THE SOUTH-WESTERN REGIONS OF POLAND IN THE LIGHT OF NEW RESEARCH

Bogusław Gediga

Abstract: The findings of new research from several sites in Lower Silesia (Domasław, district Wrocław) clearly indicate a new picture of the model of culture in the Early Iron Age. In many respects, it resembles the circle of the Hallstatt culture formed in the Alpine area. This is a departure from the view that archaeological Lusatian culture was still functioning in that period in Lower Silesia, in the adjacent part of Great Poland and in a part of Upper Silesia (the Głubczyce Plateau and the Gliwice-Częstochowa group). The inclusion of the culture of the communities, inhabiting the aforementioned part of Upper Silesia and the central and southern parts of Lower Silesia, into the circle of the Hallstatt culture is well-founded. It should also be treated as the regional, north-eastern group or province of that cultural circle.

Keywords: Silesia, Early Iron Age, the local region of the circle of the Hallstatt culture

Introduction

Large-scale excavations, undertaken within the space of the last several years mainly as rescue excavations connected with large road construction projects, have often produced significant results which necessitate a change in our current view of the past.

In the most popular periodization of prehistory used in the Polish literature and established many years ago by J. Kostrzewski (1948:118-359; Kostrzewski, Chmielewski & Jążdżewski 1965: 119-228), the early period of the Iron Age is the Hallstatt period, divided into the Hallstatt C and Hallstatt D periods (Table 1). In Kostrzewski's opinion, the Lusatian culture continued to exist in the territories within present day Poland in the Hallstatt period. That this culture developed in the Middle Bronze Age, i.e. in Period III of the Bronze Age in Montelius' chronology, was accepted by J. Kostrzewski (1948:118-359; Kostrzewski, Chmielewski & Jążdżewski 1965:119-228; Dąbrowski 2009:17, tab. 1). The view that the Lusatian culture existed for over a thousand years has been quite dominant in the Polish literature. Similarly, it is widely assumed that the culture occupied a considerably broad area (Hensel, Dąbrowski & Rajewski eds. 1979; Dąbrowski 2009: 62, map 5). Opinions suggesting an opposite view on cultural changes in the Polish area in the period between the Middle Bronze Age and the Hallstatt period, or even the beginning of the next period, hardly challenge the traditional view (Dąbrowski 2009: 37-41).

Actually, ever since the Lusatian culture was first distinguished, and in the Polish literature since the first synthesizing perspectives on prehistory of the Polish lands, it has been observed that the culture was not homogeneous. This has been expressed by distinguishing local groups within the culture. The most comprehensive picture of the diversity of the Lusatian culture was presented by J. Kostrzewski, at first concerning Great Poland (Kostrzewski 1955: maps 9, 10) and then for the whole Poland (Kostrzewski, Chmielewski & Jążdżewski 1965: 192-219). In broad outline, the picture, with various attempts at modification, has remained valid to the present day (Hensel, Dąbrowski & Rajewski 1979: II. 16, 36, 44, 55, 56).

Sources concerning the Lusatian culture have changed significantly since Kostrzewski's description of the culture in the

Table 1 Chronology and periodization of the Bronze Age and Early Iron Age, after J. Dąbrowski (2009: 17) and B. Gediga.

B.C.	System O. Montelius	System P. Reinecke	System J. Kostrzewskie
300	Iron Age		Early Lat. Period
400		HD	HD
500			
600	VI	HC	HC
700			
800	V	HB	V
900			
1000	IV		IV
1100		HA Hallstatt	
1200	III	D	III
1300		C	
1400	II		II
1500		B	
1600			
1700	I		I
1800	Bronze Age Periode	A	Bronze Age Periode
1900			
2000			
2100		Bronze Age Periode	
2200			



Fig. 1 The Hallstatt culture in Europe, after Schlette (1984:28) with supplement B. Gediga.

Polish lands (Kostrzewski, Chmielewski & Jazdzewski 1965: 192-219). Thus, it is necessary to consider whether the picture of the Lusatian culture needs to be revised and understood differently today. Taking that into account, in the light of new sources, it is reasonable to reconsider the definition of the Lusatian culture based on two connected aspects: the territorial and chronological ranges of the culture. Some of the issues have already been mentioned (Gediga 1984, 2007). Here, they are considered with reference to the area of Silesia and the part of western Great Poland as far as the Gniezno Lakeland in a north-easterly direction, and chronologically limited to the Early Iron Age. This is the area where, until now, local groups of the Lusatian culture have been located. In Kostrzewski's opinion, the Central-Silesian and the West-Great Poland groups, modified later *inter alios* by Gardawski (1979: figs. 55, 56) and Gedl (1975), were situated there.

In the accepted periodization of prehistory of the area of Poland, as in many other Central European countries, the early period of the Iron Age has been called the Hallstatt period (Kostrzewski 1948, 1949: 122-156; Kostrzewski, Chmielewski & Jazdzewski 1965: 191-228). To some extent, that name indicates the significance of the Hallstatt culture for the development of the cultural picture of the beginnings of the new age. Regarding the communities inhabiting the region of Poland at that time, the role of the Hallstatt culture differed widely. For this reason, the term Early Iron Age seems to be more suitable concerning the whole area of Poland.

Silesia and the Hallstatt culture

With regard to Silesia, it has been assumed that this region was

on the periphery of the Hallstatt culture in the Early Iron Age. At present, however, it is an open question whether Silesia was really only on the periphery of the Hallstatt culture (Reitinger 1981: 9), or was it rather a territory under the influence of this culture, in some specific regional character. New evidence has entailed changes in the cultural model, noticeable especially in the picture of the social structure. The new evidence suggests that Silesia in the Early Iron Age can be treated as another regional group of the Alpine cultural circle, until recently called the Hallstatt culture (Schlette 1984:7-9). Such a perspective on the picture of the culture of the Early Iron Age in Silesia, and probably also in adjacent regions, such as south-western Great Poland (Fig. 1) and probably the north-eastern part of this region up to Kuyavia, implies that more thought should have been given to connecting these regions in the Early Iron Age with influences of the Lusatian culture.

The proposed description of Silesia and possibly the aforementioned adjacent regions, on the basis of results of the latest excavations (Gediga 2007; Gedl 2002; Madera 1999), as regional groups of the Hallstatt culture, also suggests a different perspective on the Hallstatt culture itself, which broadens the notion of the culture and opens it to the picture of the Early Iron Age in Europe. We face a new problem then, which is not only a question of terminology.

The notion of the Hallstatt culture has an established tradition. Including neighbouring regional groups, as suggested in this paper where it is proposed that Silesia and the adjacent regions of Great Poland should be added to the definition of the Hallstatt culture,

would change its traditional meaning, which has been presented chiefly in Austrian archaeology (Angeli 1970a: 24-2; Pömer & Straub (eds.) 1980: map 334; Reitinger 1981: 9-10). However, the range of the concept, from the point of view of territorial coverage of the considered culture, is presented variously (Schlette 1984: 28; Powell 1999: 48, fig. 26). At the same time, cultural changes, which have been observed within the classic, traditionally understood Hallstatt culture, have also been noted, to a greater or lesser extent, in other cultural regions of Central Europe (Angeli 1970: 3-13, Pömer & Straub (eds.) 1980; C. & A. Eibner eds. 1981; Jażdżewski 1981: 377-451; Schlette 1984: 18-27; Jerem ed. 1984; Jerem & Lippert eds. 1996; Gediga & Piotrowski eds. 2010). Therefore, it is likely that a new perspective, covering the whole cultural area that indicates analogous features as observed in the traditionally understood Hallstatt culture, stretching from eastern France to western Hungary, would be necessary. Adding new regional groups to the concept of that culture, which has been substantiated, like in the case of Silesia, by new research, diversifies the picture of culture of a large area of Central Europe. For the aforementioned reasons, the whole territory influenced by the process of 'hallstattization' should be recognized and described. Furthermore, characteristic cultural phenomena of this territory surpass the traditional ones connected with Hallstatt culture in its narrow meaning. We are faced with a seemingly purely formal dilemma about the naming of this Central European area, which was a certain, multi-aspect *koine*. That community would not be defined only by painted pottery (Kimmig 1983: 71) or by the geometric style (Bouzek 1997: 60, 2008: 128-129), developed mainly under the influences of the eastern part of the Mediterranean Sea.

Very significant common features have been observed in the level of the economic development of this community as well as in the diversification of the population, which for the first time has been manifested so clearly in archaeological sources concerning prehistoric European communities. In the lands north of the Alps, from eastern France to the Adriatic area, Slovakia and Silesia, the development of the ruling class, a kind of aristocracy or Hallstatt oligarchy, the class of chiefs-princes has been observed in archaeological sources found mainly in impressive, richly equipped graves of the princely type (for example Kleinklein, Hochmichele & Hochdorf, Vix). The princes were probably initiators of a kind of court culture and of the development of the hereditary character of their social rank which is proved both by their residences, built with future generations from their sphere in mind, and by separate burial grounds or sectioned-off areas in bigger cemeteries. In general it can be observed that the especially rapid process called 'mediterraneanization' (Kimmig 1983a: 71) took place in the aforementioned areas. Before a firmer basis for proposing a new name for that cultural sphere is developed, I propose the term 'the sphere of the circle of the Hallstatt culture'. This term broadens the traditional notion of the Hallstatt culture as well as retains the traditional perception of its culture.

Features of the Hallstatt culture

Several distinctive features of the Hallstatt culture are commonly emphasized in particular. These features can be expanded into the whole of the proposed sphere of the circle of the Hallstatt culture covering some regional groups or provinces in the aforementioned area.

Researchers of the Hallstatt culture emphasize the aforesaid phenomenon of changes in the social structure, which are clearly manifested in archaeological sources (Reitinger 1981: 10). As

mentioned above, the class of a characteristic kind of aristocracy as well as family oligarchy, originated from the aristocracy, developed in the society of the Hallstatt culture. The prince-chiefs or the leaders of the Hallstatt culture erected impressive, fortified residences (Kimmig 1983; Biel & Krause eds. 2005), where a certain style of court culture came into being. Additional evidence of 'courtly' behaviours have been found on figurative friezes from bronze vessels from the circle of situla art, where scenes of feasts, drinking wine, dumbbell competitions and musical contests (*agons*) are represented (Kastelic 1964; Müller-Karpe 1968: 143-1963; Frey 1969: 1; Eibner, A 1981: 261-296; Reitinger 1981: 27-30). In the vicinity of their residences, those aristocrats buried their dead in impressive, richly equipped, monumental burial mounds (Frey 1980: 81-93; Dobiat 1980; Reitinger 1981; Biel 1982, 1985; Kramer 2006). Taking those phenomena into consideration, we can allow for the possibility that some kind of dynastic way of thinking appeared in the consciousness of that aristocracy.

Members of the Hallstatt culture were also the most advanced society of prehistoric Europe in the Early Iron Age in terms of economy. The population of the society disseminated iron metallurgy and exploitation of mineral deposits, including salt deposits (Reitinger 1981: 7-8; Barth 1980: 67-79; Kern, Kowarik, Rausch, Reschreiter eds. 2008). It was also able to establish and to keep regular close relations with the circle of the Mediterranean civilization: with Greek colonies including colonies in the west, mainly with Massalia at the mouth of the Rhone (Frey 1980: 106-109), as well as later with colonies on the Adriatic – Adria and Spina and cultures lying to the south of the Alps (the Etruscans) (Aigner-Foresti ed. 1992). Luxury goods were imported from there, which also raised the prestige of the society's ruling class participating in these relations most actively and aspiring to imitate the impressive standard of living and the lifestyle of that circle.

The society of the Hallstatt culture also had numerous significant achievements in the sphere of symbolic culture, visible inter alia in art, inspired largely by influences of the Mediterranean civilization (Kimmig 1983a; Frey 1980: 106-109). It is enough to refer to excellent achievements in pottery, for example painted and encrusted pottery, which had all of the features of great works of art. The development of situla art in the eastern Hallstatt circle, in connection with the development of analogous toreutics in northern Italy in the area of Bologna, Este and Venice (Frey 1969), should be rated among further achievements in the field of art. Friezes of situla art illustrate important events and customs of the society, yet in many cases some mythological, or even philosophical, motifs can be also found on them (Müller-Karpe 1968: 151-153; Gediga 2001: 53-56).

The Hallstatt culture has been distinguished by the aforementioned characteristic elements, which are its most significant features. Are analogous features found in the culture of the Early Iron Age in Silesia and in the adjacent areas of Great Poland? Indeed, based on these fundamental characteristics outlined above, the inclusion of these regions into the proposed sphere of the circle of the Hallstatt culture is sufficiently well-founded.

New archaeological evidence from Poland

From the Polish territory, until recently, only a few evocative examples were known, which could prove the existence, in the society of the Early Iron Age, of the ruling class of the aristocracy, distinguished by affluence and the social rank, as well as family oligarchy, originating from the aristocracy. Among the examples,

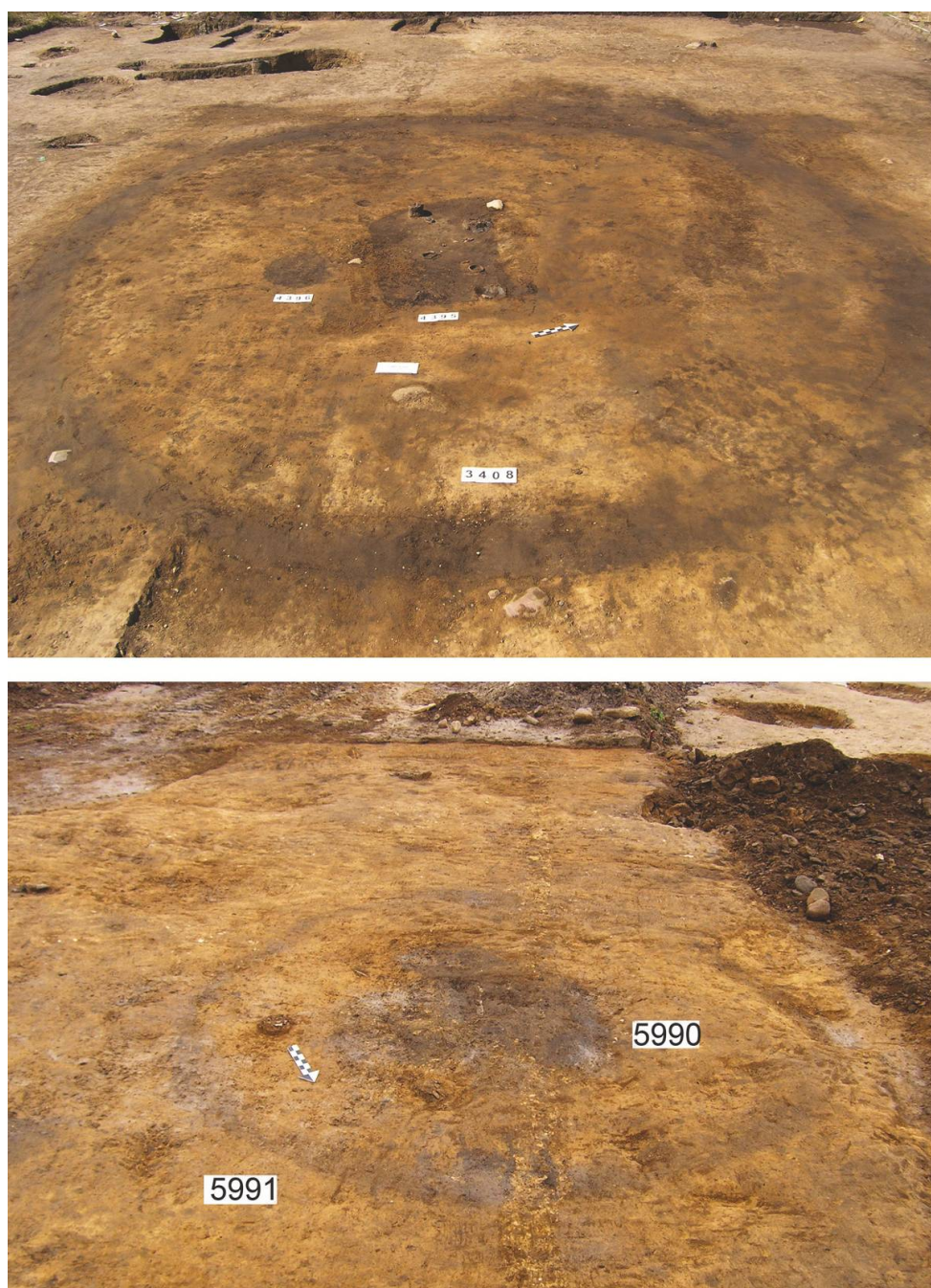


Fig. 2 Chamber graves nos. 4395 and 5990 surrounded by circles, Domasław, district Wrocław. Photo: A. Józefowska, (Archive of the Institute of Archaeology and Ethnology, Polish Academy of Sciences, Wrocław).

there were richly equipped chamber tombs, inter alia in Kietrz, district Głubczyce (Gedl 1973), rich graves from the burial ground in Gorszewice, district Szamotuły (Pieczyński 1953 [1954]; Szafrński 1961), situated in the vicinity of the fortified settlement in Komorowo, district Szamotuły (Malinowski 1985, 297-300), which most probably functioned as a trading post on the Amber Road.

The very richly equipped grave of a warrior, with a complicated stone construction, discovered in 1995 in the burial ground in Łazy, district Wołów (Madera 1999: 231-246), was the first signal that it was necessary to take a new look at the problem of the social structure of the early Iron Age population in Lower Silesia.

The most extensive sources of knowledge on the culture of the Early Iron Age, inter alia also on the picture of the social structure, were gained in Lower Silesia as a result of rescue excavations undertaken by archaeological academic institutions on great road development projects over the last several years (Maciszewski and Krzyżaniak 2005).

For the first time in the history of archaeological research, a group of nearly 300 Early Iron Age cremation burials were discovered and excavated in Lower Silesia on the burial ground of the population of the Lusatian culture from the Bronze Age and the Early Iron Age in Domasław, district Wrocław (Gediga 2007, 2010). The burials had complicated structures and were



Fig. 3 Graves from Domasław, district Wrocław, (grave no. 460 and no. 7429, which was especially richly furnished with swords and bronze vessel. Photo: A. Józefowska, (Archive of the Institute of Archaeology and Ethnology, Polish Academy of Sciences, Wrocław).



Fig. 4 Grave no. 543, with traces of wooden structures of chambers, Domasław, district Wrocław. Photo: L. Nowaczyk, (Archive of the Institute of Archaeology and Ethnology, Polish Academy of Sciences, Wrocław).



Fig. 5 Painted pottery, Domasław, district Wrocław. Photo: I. Dolata-Daszkiewicz (Archive of the Institute of Archaeology and Ethnology, Polish Academy of Sciences, Wrocław).

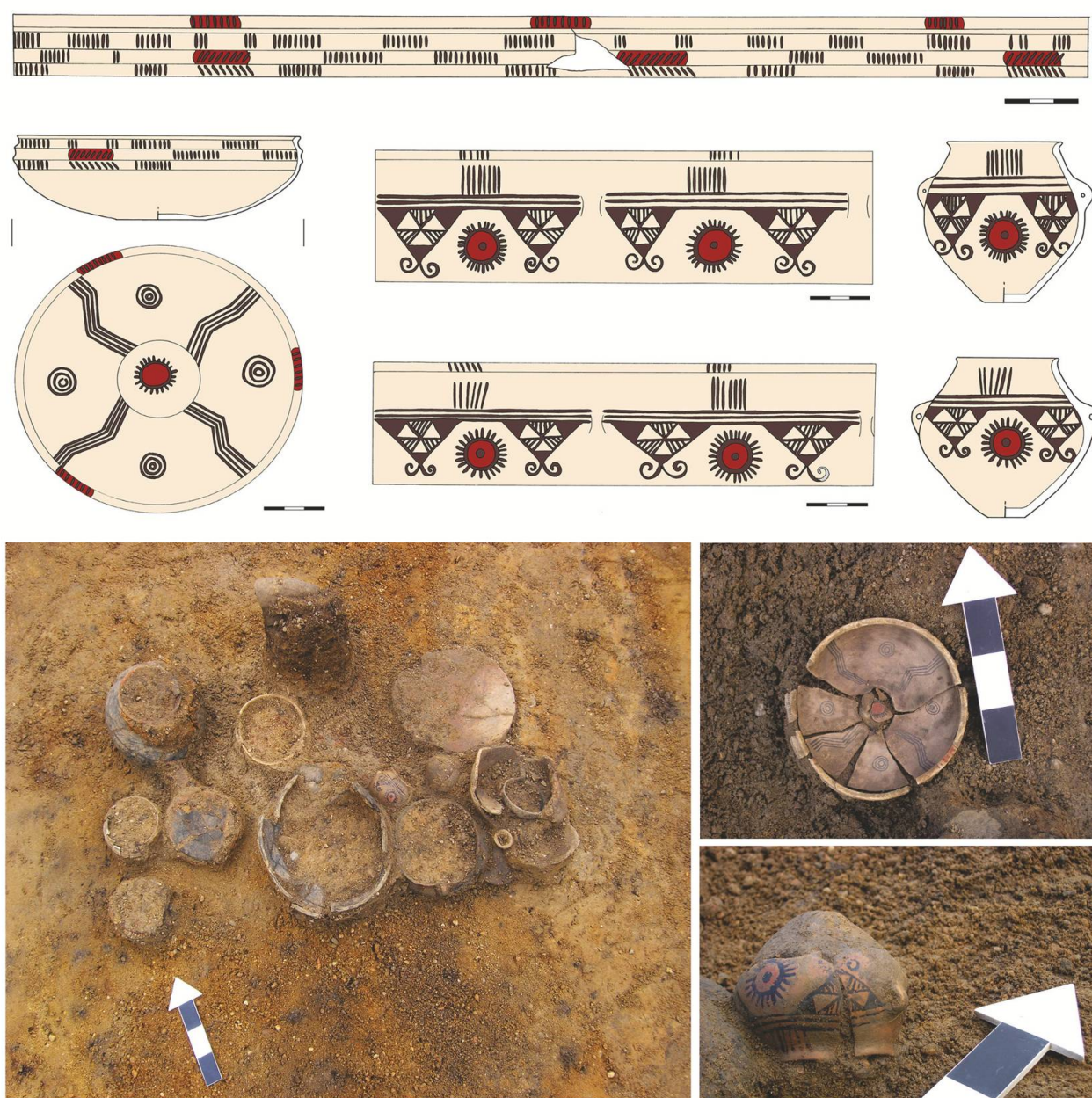


Fig. 6 Painted pottery, Domasław, district Wrocław, grave no. 10818. Photo: A. Józefowska and drawing by M. Markiewicz (Archive of the Institute of Archaeology and Ethnology, Polish Academy of Sciences, Wrocław).

exceptionally richly equipped, in terms of quantity as well as quality. The graves from the Hallstatt period (900 graves) form a clearly distinguished, separate area in the burial ground. Moreover, some older burials (1,600 graves) from the Bronze Age (Period V Montelius) were found, mainly in the other part of the burial ground, as well as dispersed burials from the Bronze Age Period III (Montelius). The group of graves from the Hallstatt period clearly presents the picture of diverse social structure. The construction and equipment of these graves, which were, in the majority of cases, the chamber ones, present an irrefutable picture of a different society of completely different cultural character, significantly changed in comparison with the picture of the Lusatian culture from its early phases as well as from the end of the Bronze Age (Gediga 2007).

The graves from the Early Iron Age from the burial ground

in Domasław seem to prove very distinctly that the picture of material culture changed in that period to a large extent, which is illustrated clearly by the rich equipment and the construction of the chamber graves. Some of the chamber graves were surrounded by circles of ditches of up to 15 metres in diameter (Fig. 1). As a rule, those graves with complicated constructions were especially richly equipped with objects belonging to members of the community buried there (Fig. 2). These graves on the burial ground in Domasław are sometimes accompanied by simple, definitely poor graves from the Hallstatt period situated among them. They were equipped with an urn and few additional vessels, or occasionally with metal objects, too. As opposed to the poor ones, the rich graves were placed in big pits of 1 to 4 metres in diameter and up to 2 metres in depth. Within the pits, there were wooden structures of chambers, most often rectangular in shape in horizontal projection (Fig. 3).



Fig. 7 Graphite luxury pottery, Domasław, district Wrocław. Photo: I. Dolata-Daszkiewicz (Archive of the Institute of Archaeology and Ethnology, Polish Academy of Sciences, Wrocław).



Fig 8 Four-wheeled cart, Domasław, district Wrocław, grave no. 4270. Photo: A. Woźniak and I. Dolata-Daszkiewicz (Archive of the Institute of Archaeology and Ethnology, Polish Academy of Sciences, Wrocław).

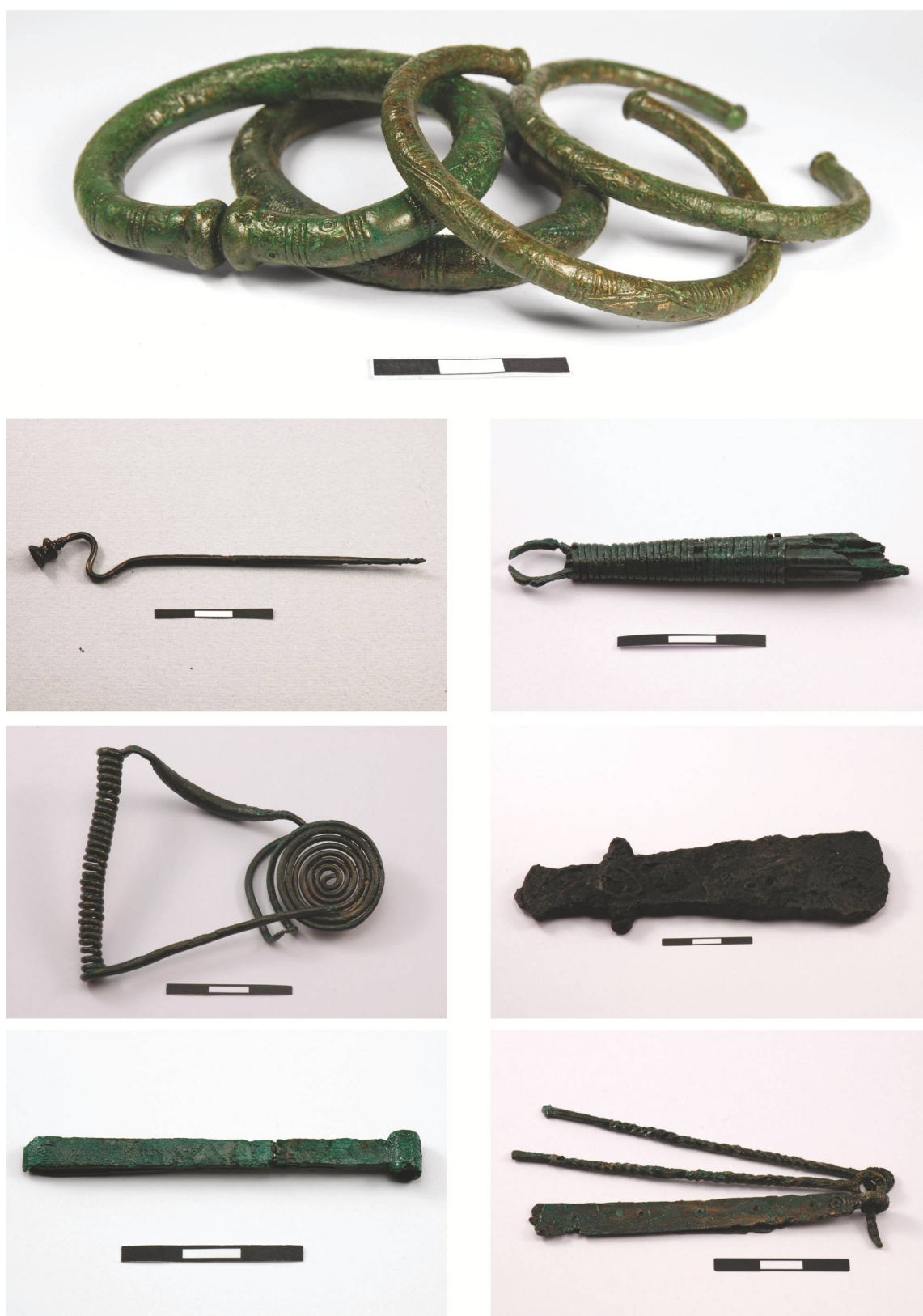


Fig. 9 Bronze and iron artefacts, Domasław, district Wrocław. Photo: I. Dolata-Daszkiewicz (Archive of the Institute of Archaeology and Ethnology, Polish Academy of Sciences, Wrocław).



Fig. 10 Bronze vessels, Domasław, district Wrocław, grave nos. 360 and 8905. Photo: A. Woźniak and A. Józefowska.

Apart from the construction, these graves from Domasław are distinguished by the equipment. They were sometimes equipped with a single urn, and sometimes with few urns, as well as with about a dozen up to over 50 additional vessels; among them, pieces of luxury Hallstatt pottery (Fig. 6) are frequent, including numerous pieces of Silesian painted pottery (Figs. 4, 5) (Łaciak 2010).

Found among the painted pottery, a four-wheeled cart from the grave no. 4270 (Fig. 7) is undoubtedly the most valuable artefact as well as a sensation in European archaeology of the Early Iron Age. The cultic symbolism of the cart motif was widespread *inter alia* in the Bronze Age and in the Early Iron Age (Bouzek 1997: 179-180; Vosteen 1999; Gediga 2002: 119-124; Podborský 2006: 309). The relationship between that symbolism and the cult seems to have been repeatedly proved. The fact that the cart was put in the grave of a person who had belonged to the prominent social group, which is demonstrated by the construction and by the very rich equipment of the grave (Gediga 2010: 199-200), indicates that it had acquired specific significance in funeral rites. In this case, it is most probably a trace of the influences of the Mediterranean civilization circle, including ancient Greece, where the deceased chief-leader was most frequently conveyed to his last resting place on a cart (*ekfóra*) (Bernhard 1989: 245-247).

A large number of metal objects, mainly of bronze, have been found in the graves in the burial ground in Domasław (Fig. 8). Yet, iron artefacts were also very numerous (Figs. 8, 10).

Bronze vessels have been found in three of the excavated graves (graves no. 360 Fig. 9, 390; Fig. 10, 8905; Fig. 9), which, like a considerable proportion of metal objects, were imports from the Alpine area of the Hallstatt culture and from northern Italy (Gediga 2010:203-204). A large number of amber (Fig. 11), bronze (Fig. 11) and glass beads as well as golden jewellery (Fig. 12) were also among jewellery found in the rich graves excavated in the burial ground.

Even a cursory description of the equipment of the rich graves from the burial ground in Domasław proves that the ruling class of the community burying the deceased in the cemetery had extensive trade relations with important cultural centres at that time. Similarly, the ruling class of the society of the Hallstatt culture had such relations, especially with societies from south of the Alps (*inter alios* von Hase 1992).

Conclusions

To sum up the results of excavations at the burial ground from the Early Iron Age in Domasław, it can be concluded that the picture of the culture of the community using the cemetery is concurrent and analogous with the culture of the sphere of the circle of the Hallstatt culture based on some significant features that distinguish the culture.

The parallel confirmation of the analogous similarity with the sphere of the Hallstatt culture has been gained in the course of



Fig. 11 Iron sword and bronze vessel from Domasław, district Wrocław, grave 390. Photo: A. Woźniak and B. Miazga.



Fig. 12 Bronze and amber beads from Domasław, district Wrocław. Photo: I. Dolata-Daszkiewicz (Archive of the Institute of Archaeology and Ethnology, Polish Academy of Sciences, Wrocław).



Fig. 13 Gold jewellery from Domasław, district Wrocław.



Fig. 14 Early Iron Age settlement with a fence of palisade type, Milejowice, district Wrocław. Photo: A. Kosicki (Archive of the Institute of Archaeology and Ethnology, Polish Academy of Sciences, Wrocław).



Fig. 15 Early Iron Age fortified settlement, Biskupin, district Żnin, according to W. Zajaczkowski.

excavations conducted on settlements from the Early Iron Age in Lower Silesia. From this aspect, findings on the settlement in Milejowice (Bugaj & Kopiasz 2008) and in Stary Śleszów, district Wrocław (Kopiasz 2001) are particularly worthy of note. In both cases, the special area was sectioned off and surrounded by a fence of palisade type (Fig. 13). There is every indication that the sectioned-off areas of the settlements were inhabited by a community of special social status. Both bigger houses, in comparison with other buildings, and a large amount of pottery which can be described as luxury, including fragments of painted pottery (Kopiasz 2008), confirm the status.

The above brief description of findings of new research on some sites in Lower Silesia presents significant features of a new picture of the model of culture in the Early Iron Age. In many respects, it resembles the picture formed in the Alpine area of the circle of the Hallstatt culture. This involves a departure from the view that the Lusatian culture was still functioning at that time in Lower Silesia, in the adjacent part of Great Poland and in a part of Upper Silesia (the Głubczyce Plateau and the Gliwice-Częstochowa group). The inclusion of the culture of the communities inhabiting Upper Silesia and the central and the southern part of Lower Silesia into the circle of the Hallstatt culture appears to be well-founded. It should therefore be treated as the regional, north-eastern group or province of that cultural circle. The adjacent part of Great Poland, more or less to the Warta River, namely the area of the Great Poland Lowlands and the Poznań Lakeland, should certainly be included in that province as well.

In the Hallstatt period, the peak cultural development of the East-Great Poland group of the Lusatian culture has also been observed, which is expressed by fortified settlements situated on peninsulas and islands on lakes of the Gniezno Lakeland. The fortified settlement in Biskupin (Fig. 14) is a prime example of them, together with settlements in nearby Izdebnó, Sobiejuchy, Jankowo and others. In the majority of cases, they are distinguished by regularly spaced buildings within the ramparts and by well-preserved wooden structures of the buildings. However, the East-Great Poland group of the Lusatian culture represents a different cultural model, very distant from the features distinguishing the above-discussed cultural model from Silesia and the adjacent part of Great Poland, belonging to the circle of the Alpine sphere of the Hallstatt culture. It seems that the observed peak cultural development was a consequence of local achievements, without any stronger influences of the south-western cultural centres. There is no indication of a considerable inflow of imports from the Alpine area of the Hallstatt culture and from Italy to this area (Łuka 1959, map 1; Gedl 1991: 121-122). The imports have been found much more rarely there than in Silesia and the adjacent part of Great Poland (Kopiasz 2008a:51-55). Remnants of influences of these cultural centres can be found in the form of not numerous pieces of painted pottery of the Silesian type as well as in very evocative motifs of figural scenes on pottery (Kostrzewski 1936: 135, tables XXXIII/14, XXXIV/11; Kopiasz 2008a: 51-55; Zajęczkowski 2000: 201-208). All things considered, the culture of the area of eastern Great Poland and situated there the local East-Great Poland group of the Lusatian culture, which experienced its peak cultural development in the Early Iron Age, cannot be included in the sphere of the Alpine circle of the Hallstatt culture. Only Silesia and the adjacent, western part of Great Poland can be recognized as a part of this sphere (Fig. 1).

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HAVING AN AXE TO GRIND: AN EXAMINATION OF TRADITION IN THE SICILIAN IRON AGE

Christian Mühlenbock

Abstract: The present article investigates the meaning of tradition at Monte Polizzo, an Iron Age community. The local societies in western Sicily have generally, as an antithesis to the contemporary Greek communities, been characterized as 'traditional'. The basis for the epithet 'traditional' is seldom clear. In this text it is argued that it can be instructive to examine features, objects and practices which can be positively identified as 'traditional' in their proper contexts. Traditional objects were integrated into the political, social and environmental realities of sixth-century Sicily. Hence, tradition was not necessarily a passive state of being. Rather, through numerous examples this article shows that traditions, like most forms of human social practice, were manipulated and adapted in accordance with the needs of the present.

Keywords: Traditions, Identity, Elymians, Monte Polizzo, Capeduncola and Sicilian Iron Age

Introduction

This article has evolved out of the last ten years of archaeological field work at Monte Polizzo, a large proto urban settlement in the hinterland of western Sicily.¹ Here, a conglomerate of American and European institutions collaborated to explore the effects and outcomes of interaction between the indigenous Greeks and Phoenicians during the seventh and sixth centuries BC. Monte Polizzo was established as one powerful centre in the area during the late seventh century BC. The site is thus roughly contemporary with Selinunte (Selinous), the westernmost Greek settlement, located only 40 kilometres from Monte Polizzo (Mühlenbock 2008:27). Further west, at the very tip of the triangle that constitutes the island, we find Phoenician-Punic Motya, settled sometime during the eighth century BC (Famá 2002). In this narrow strip of land we find people with different backgrounds, traditions and ambitions, originating from various places in the eastern and central Mediterranean. For some time western Sicily was one of the most contested territories in the whole Mediterranean (Morris 2003: 47-48).

In my dissertation I explored, among other things, the relationship between tradition, innovation and interaction (Mühlenbock 2008). As often happens within archaeological research, I found that a number of the theoretical models that previously have been used in the study of interaction in archaic Sicily, such as hellenization and hybridization theories, were insufficient when it came to explaining what went on at Monte Polizzo during the time period (Mühlenbock 2008:195-199). In particular, they fall short when it comes to explaining why there are so many elements that appear traditional rather than products of foreign influences or hybrid practice. I found the idea of hellenization insufficient because it so explicitly focused on what was believed to be an unreserved and predestined adoption of foreign (mostly Greek) material culture by the less progressive and traditional local societies in Sicily (Dunbabin 1948; Finley 1979; Sjöqvist 1973). Hybridization theories, on the other hand, are useful tools in displaying how

novel human practice can emerge in the meeting of people from different cultures but lacks the potential to demonstrate how and why identity boundaries at the same time are jealously guarded and maintained. The enormous difference displayed in the material culture between for instance sixth-century Monte Polizzo, Selinunte and Motya speaks for itself; it is a strong and potent sign of the fact that the various groups quite defensively marked their own identities in relation to each other. Similar criticism concerning the ability of hybridization theories to shed light on colonial situations in the ancient world has recently been proposed by Cañete and Vivez-Ferrándiz (2011).

Therefore, in this article I wish to present my interpretation of the ways in which the inhabitants of Monte Polizzo used material culture to define their own history and their own identity. This is where I believe that tradition and traditional elements emerge as an important component.

Many scholars have quite rightly noted that the local population in the interior of western Sicily preserved a number of traditional elements over a long period of time (La Rosa 1996; Leighton 1999:188; Tusa 2000). In this respect I investigate how these traditional elements relate to the society and why certain traditional elements were maintained over a wide horizon of time.

Defining tradition

Scanning the literature concerning the use of traditions in the past I found two main trajectories. The first and the most straightforward way of investigating tradition in archaeology was originally defined by Willey and Phillips (1958). They define tradition in archaeology as referring to assemblages, artefacts or other types of material culture, architectural styles or social practices that last longer than a phase or the duration of a horizon (Willey & Phillips 1958:25-30). Thus it implies a sort of cultural continuity even if there are local or regional patterns in the archaeological material. Hence, if cultural elements transgress our mechanical definition of a given period of time, we are talking about a tradition.

The other type of tradition which is often discussed relates more to how individuals might invoke traditional elements in order to give an impression of specific links to the past. Here, the objects

¹ Here I would like to take the opportunity to thank Professor Kristian Kristiansen for inviting me to participate in the Scandinavian Sicilian Archaeological Project (SSAP) more than ten years ago. One of the qualities that I value most in Professor Kristiansen is his ability to challenge boundaries and break new paths into unknown territories. I feel that the SSAP is very much a product of this pioneer spirit and visionary approach to the subject of Archaeology.

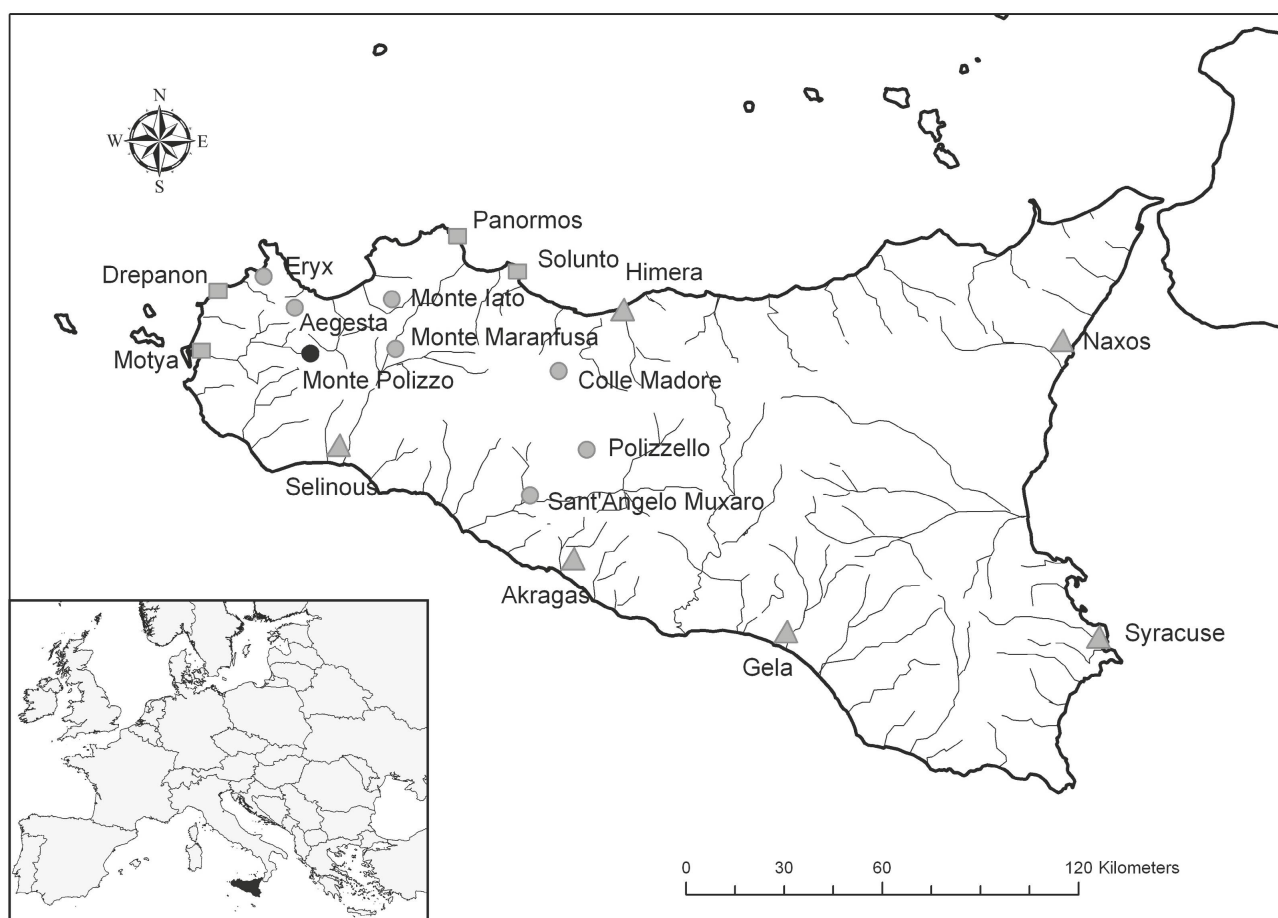


Fig. 1 Map showing sixth-century Sicily with an emphasis on the most prominent settlements on the western part of the island. Round dots mark indigenous settlements; rectangular dots Phoenician/Punic settlements; and triangular dots indicate Greek settlements.

are combined with an interpretation of the practices that might be related to the object or features in question.

Inventing traditions is taken to mean a set of practices, normally governed by overtly or tacitly rules and of a ritual or symbolic nature, which seek to inculcate certain values and norms of behaviour by repetition, which automatically implies continuity with the past. (Hobsbawm 1992:1).

Invented traditions are often designed with the aim to reach certain goals or benefits. These are often related to all or either of the following: 1. To establish social cohesion or group membership to real or imagined communities; 2. Establishing or legitimizing institutions, or status differences based on genealogical ties; 3. To underline the social ties between groups and individual from different communities (Hobsbawm 1992:5-6).

The main tool for separating a tradition and invented tradition from each other is to pay close attention to time and chronology. If a traditional element crosses over the boundaries of two or several chronological time horizons we are probably dealing with a tradition in archaeological terms. If, however, we find that a traditional element disappears and pops up again a hundred years later, we can expect that this might be part of inventing or reviving practices which are somehow related to past traditions. In this respect it is quite irrelevant if the past practice is real or imagined,

the important thing is the link to the past. Furthermore, we have to expect that there can be nuances in how traditional elements are preserved and maintained over time.

Iron Age Sicily

Monte Polizzo was, like many other settlements in the area, established on a hilltop with a commanding view over the landscape of western Sicily. While Greek and Phoenician habitation sites were mostly located along the coasts; many indigenous societies preferred the safety provided by the mountainous inland (Spatafora 1997; Vassallo 2000). This for good reasons, as the mountains not only provided protection, they also embraced some of the most fertile territories in the whole region (Stika et. al. 2008). We know that during Late Bronze Age substantial settlements (possibly with as many as 500 inhabitants) had already been established in the mountainous inland (Earle & Kolb 2010). This process was enhanced during the Iron Age. Indeed, Stefano Vassallo has demonstrated that the mountain regions in Sicily were extensively settled sometime between the eighth and sixth century BC. From the eighth century we have ten settlements known in the region, while during the sixth century BC this number increased to almost fifty settlements (Vassallo 2000). A number of factors coincided to make this happen. Firstly, climate change in combination with major valley alleviation made farming more profitable which in turn resulted in a considerable population

Chronological table of the periods named in the text compiled by the author

Period	Years BC
Early Neolithic	6000-5000
Middle Neolithic	5000-4000
Late Neolithic	4000-3500
Early Copper Age	3500-3000
Late Copper Age	3000-2500
Early Bronze Age	2500-1500
Middle Bronze Age	1500-1200
Late Bronze Age	1200-900
Early Iron Age	900-734
Iron Age (Colonial/Archaic period)	734-480
Classical Period	480-323
Hellenistic Period	323-241
Roman Republic	241-31

increase (French 2010:49). Secondly, a general urbanization trend in the Mediterranean during the Iron Age combined with new building technologies enabled the construction of considerable urban settlements with all of the required infrastructure on higher terrain (Spatafora 1997). Thirdly, a new political and economic climate emerged in the wake of the colonial endeavours. This ultimately resulted in high stake conflicts but the first hundred years were probably quite profitable for most of the communities involved (Morris 2003).

Monte Polizzo was directly related to a number of societies in the region which shared traits such as pottery style, architecture and religious practices. Although attempts have been made to associate the archaeological material with clearly distinguishable ethnic groups (Tusa 2000, 2004), these exercises have largely been futile and far from convincing (Spatafora 1996). In reality it can be quite difficult, based on archaeological evidence, to distinguish a society in central Sicily from a community based in the western part of the island.

Monte Polizzo

Monte Polizzo cover an area of 15-20 hectares and was a moderately substantial settlement during the Iron Age (Fig. 2). Recent research has demonstrated that Monte Polizzo probably had a considerable output of goods and the settlement was closely related to a number of auxiliary settlements in the region (Earle & Kolb 2010). It is also quite reasonable to believe that Monte Polizzo, with an estimated population between 1,500-3,000 inhabitants, probably enforced considerable political and possibly religious influence in the area as well.²

The geography of the site prevented any unified grid plan, and the houses were mostly adjusted to the current terrain, but there are instances where several houses were aligned in accordance with each other (Mühlenbock 2008:71). It appears that the larger buildings were located along the flat ridges, where the houses could easily be expanded (Fig. 3). The smaller houses were partly carved into the mountain sides. The house inventories demonstrate a predominantly farming economy with side incomes from

husbandry and textile production (Mühlenbock 2008:170-171). The agrarian output was probably considerable as demonstrated by one of the excavated houses, house 1, which contained enough storage capacity to enable a family of eight to be self-sufficient for more than a year (Mühlenbock 2008:84).

Religious buildings were located at the site's highest location (725.9 metres above sea level). The first structure was erected around 600 BC. It was a large rectangular building with open air sacrifice. Twenty-five years later (ca. 575) the rectangular building was replaced by a round open air altar with an enclosing boundary wall (Fig.4). The round shape of the sanctuary may have referred back to the round huts that were common in the area until the eighth century BC (Morris & Tusa 2004:77). Offerings from deer antlers were discovered in pits adjacent to the altar. Some of the antlers were possibly modified in order to be attached to headdresses (Morris & Tusa 2004:74). The headdresses were subsequently used in ceremonies and rituals intended to blur the boundaries between animals, humans and gods (Morris & Tusa 2004:75). Faunal studies from Monte Polizzo and other indigenous sites in the area show that the introduction of deer rituals runs parallel with the decline of deer meat in the daily diet (Morris et al. 2004:238). The ninth and eighth-century domestic deposits at Monte Maranfusa contained 11% red deer bones while the sixth-century deposits at the same site only contained 4% red deer bones. At sixth-century Monte Polizzo domestic contexts we find similar and even lower figures (Morris et al. 2004:238; Vretemark 2010).

The excavator's interpretation of the context at the Acropolis is that the architecture of the sanctuary and the ritual practices performed there – particularly the deer rituals - referred back to a thousand years of Sicilian traditions (Morris & Tusa 2004:77). It is evident that referring to ancient behaviour in public rituals was part of a common strategy to commemorate the past in a very practical and repetitive way.

Pottery production: between tradition and invention

A major part of our knowledge about Monte Polizzo derives from pottery and also how pottery is distributed in relation to various contexts. Therefore, I will proceed with a presentation of the traditional elements that are visible in the ceramic material, confining myself to a brief examination of domestic table ware due to space limitations.

² Population estimates have been proposed independently by Morris 2003 and Earle & Kolb 2010. Both reached the same figures, but based on completely different equations. Kolb claims that Monte Polizzo probably was 11.2 ha while a more precise survey of the site indicates between 15-20 hectares (Mühlenbock & Prescott 2004). If we use the population density figures in Kolb's article the total is closer to 3,000 inhabitants and I have therefore extended the possible number of inhabitants.

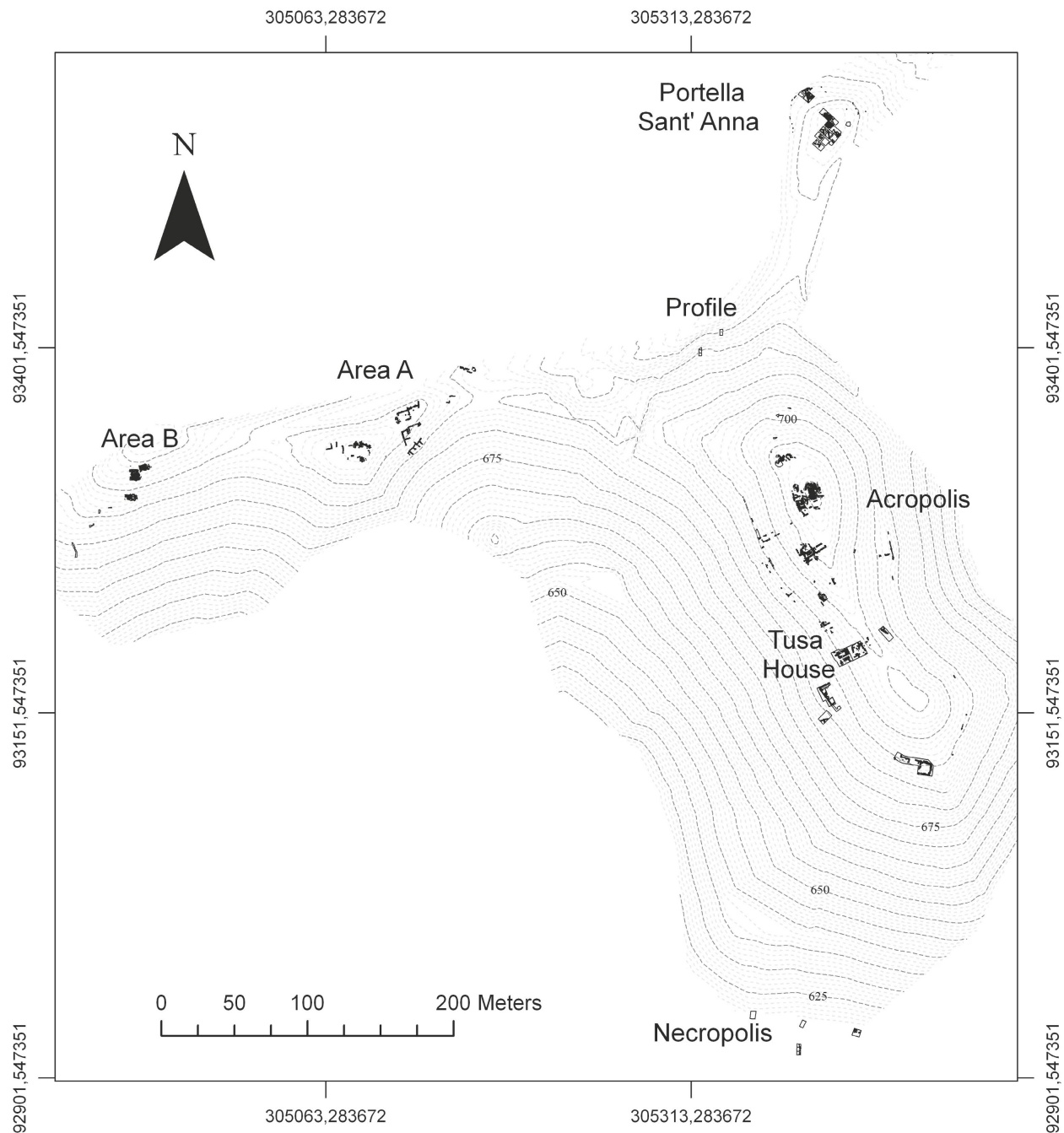


Fig. 2 The main excavation areas at Monte Polizzo mentioned in the text.

During the Iron Age there were two quite distinct pottery styles in Sicily which, as far as we can tell at the moment, existed simultaneously over a reasonably large area of Sicily. The matt painted ware was believed to mimic Aegean geometric pottery and was common in most inland sites in Sicily from the Early Iron Age (Frasca 1996:143). The other type, the incised grey ware, was less common further east but is the most dominating pottery style from sixth-century Monte Polizzo and in some of the surrounding settlements in the Trapani and Palermo regions (Spatafora 1996:98). The local grey ware has close affinities with the more archaic Sant'angelo Muxaro ware dated to the mid eighth century BC (Di Noto 1992; Leighton 1999:246). The local grey ware is therefore often considered to be more traditional and local

in comparison with the matt painted ceramics (see particularly Tusa 1997, 2004; Kolb & Speakerman 2005).

The domestic tableware repertoire at archaic Monte Polizzo is dominated by the locally produced grey ware. Indigenous craftsmen produced a wide selection of tableware such as various types of bowls, jugs, cups, table amphorae and oil lamps. Many of the forms were still traditional in the sense that similar vessels – with minor corrections - had been produced in the area over several hundred years (Mühlenbock 2008:178-179). However, a gradual adoption of shapes inspired by imports is also clearly visible. From the eighth century, the potters copied Greek elements and forms on a large scale; the copied vessels often related to

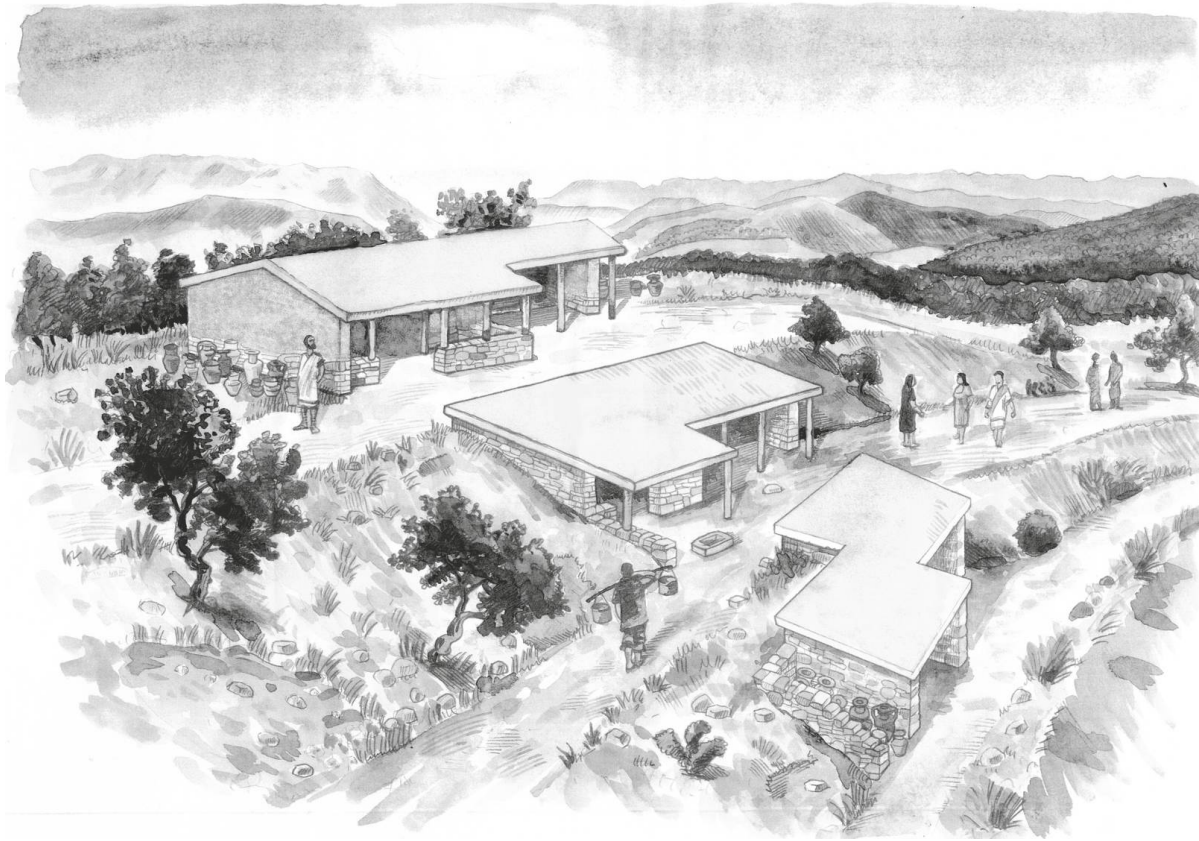


Fig. 3 Reconstruction of the houses in Area A. From the top: house 1, house 2 & house 3. Drawing: Andreas Åhman.



Fig. 4 The round sanctuary building at the Acropolis dated to the mid sixth century BC. Photograph by: Ian Morris (after Kristiansen et al. 2005:117).

wine consumption showing just how important wine drinking had become in the local societies at the time (Mühlenbock 2008:172-177).

In her dissertation about the ceramic material from the communal dump, Jeanette Cooper has demonstrated that both matt-painted and grey ware ceramics flourished in almost equal measure at Monte Polizzo until the first quarter of the sixth century (Cooper 2007:172). After that, the relative frequency of matt-painted pottery declined rapidly. This is confirmed by the low percentage (less than 1%) of matt-painted material from domestic house contexts. The development is notably different from what has been observed from other settlements in the area where matt-painted ceramics flourished until well into the fifth century BC (Cooper 2007: 175). Because grey ware ceramics are often considered to be more archaic, old-fashioned and traditional Cooper interprets the rapid decline of matt painted ceramics as a sign of cultural autonomy and conservatism among the inhabitants of Monte Polizzo (Cooper 2007:175).

Aside from the traditional vessel types that were produced on a large scale, local potters were also commissioned to produce vessels which carried a more pronounced symbolic value. These vessels were often adorned with a more intricate and complex combination of *décor* elements (Mühlenbock 2008:103-114). Most of these objects constitute anomalies and exceptions but are important because they so clearly draw upon traditions and shapes that we know originated from the Bronze Age. Hence, in these cases we can start talking about deliberate references to the past. Here, I will limit myself to two important examples.

In two of the houses from one of the excavated habitation areas (Area A) two peculiar vessels were found which combine elements that we know were common during the Bronze Age (Figs. 4 & 5). Both vessels are dippers with attached upraised handles that are moulded to represent the upper body of a human. The arms are uplifted in an adoring gesture and the anthropomorphic/zoomorphic faces have eyes and nose, but no mouth. One of the vessels appears to be more slender in style; the decoration is comparatively sparse, and it has two *dente di lupo* triangles covering the middle part of the body and the lower part of the face. Both decorative elements might possibly depict body ornaments of some sort. The rim is adorned with six holes, three on either side of the handle.

The shape of the second pot is quite similar to the first piece but there are several important differences. The shape is less proportional. It is much more squat and crude, and gives the impression of being old fashioned. Its appearance is almost identical with the Early Bronze Age dippers which at the time were common in the area. The face is schematic with a more pronounced owl-like appearance. The nose is much more accentuated and two pointed horns extend from the head. The piece is also a more highly decorated with some of the classical repertoire of motifs: *dente di lupo* patterns along the vessel rim and a small wavy pattern encircling its outer body. The handle combines two outer rows of small waves and one middle row with circles. One single circle was incised in the interior of the vessel.

The anthropomorphic/zoomorphic bodies and heads have the same position as the strap handles that normally occur on contemporary dippers (e.g. Leighton 1999). However, it is quite doubtful that the anthropomorphic/zoomorphic extensions were ever used as handles. Instead, it is more plausible that the handles were decorative elements underlying the character of the pot



Fig. 5 The anthropomorphic/zoomorphic dipper from house 3 displays both animal and human traits. Its shape is typical for ninth- and eighth-century dippers. This might indicate that it is older than the dipper found in house 1.

and alluding to the practical qualities of the dipper prototype. Therefore, we can speculate as to whether the allusion was also intended to represent the mechanics behind the dipper as a tool for assisting humans in conveying liquids and/or cereals. If this was the case, the anthropomorphic/zoomorphic dippers were not just objects intended for passive devotion. Through the mediation of the human agent the vessels were also able physically to provide either food or liquids to human subjects. Thus, it appears as though they were participants in a role playing game where it quite literally provided individuals with their daily sustenance.

The earliest possible parallels to these vessels in Sicily are large pedestal basins with zoomorphic handles, tentatively depicting bulls, from Middle Bronze Age – Late Bronze Age sites (1400-900 BC) in Lipari, Thapsos and the Platini Valley along the east coast of Sicily (La Rosa 1989:47; Spatafora 1996:101). Furthermore, there are also obvious parallels with Late Bronze Age Ausonian cups from Lipari (Leighton 1999:191). The Ausoni vessels sometimes have a distinct nose, two eyes and two pronounced horns (Leighton 1999:191). A few centuries later more human-like figures appear. A horned anthropomorphic cup was found in the tenth- to ninth-century layers at Morgantina (Stillwell 1963:171, fig. 20).

One hundred years later, in western Sicily, the discrete allusion to horned animals had been entirely replaced by figurative depictions of half human/half animal or human faces. Based on find contexts, anthropomorphic dippers from Segesta can be dated to the eighth-seventh century BC (De Vido 1997). Other examples are known from Monte Castellazzo, Montagnola di Marineo, Morgantina and Verderame (Falsone & Leonard 1978:41; Tusa 1992:77-79; Leighton 1999:265; Spatafora 2000:904; tav. CLXXI). Most of the find contexts from these sites suggest that these objects were

produced between the seventh and sixth century BC and the horned cup handle from Monte Finestrelle might be 100 years older (De Cesare & Gargini 1997:372; Trombi 2003). Interestingly, the same motifs occur in other media as well; at Colle Madore for instance, similar anthropomorphic depictions are present on sixth-century Bronze sheets (Vassallo 1997:13, tav. CCLXXIX).

The evidence at hand therefore suggests that the anthropomorphic/zoomorphic dippers were traditional vessels in the sense that they drew on the ancient practice in Sicily and Italy of attaching figurative handles on dippers or other ceramic vessels (Trombi 2003:695). However, the representations on the vessels were much more peculiar and local in the way the tradition was maintained in western Sicily during the eighth-sixth centuries BC. Here, the human traits and gestures were much more pronounced, often combined with comparatively vague animal allusions. We can therefore suspect that the whole meaning behind the dippers changed, possibly in relation to a shift in religious practices. Hence, the anthropomorphic/zoomorphic dippers are splendid examples of how traditional forms were used to integrate new meanings and values.

Having an axe to grind

The last example of a traditional object that I wish to discuss here is a small stone axe which was recovered on the floor level in one of the houses in Area A. Judging from the find context the axe is contextually contemporaneous with the Iron Age material (Fig. 6). The deposit probably was not an isolated phenomenon, as two smaller axes with perforated necks were found in a contemporary context within the settlement (Mühlenbock 2008:119-121). The date of the objects is not known but we know that small axes were probably produced over an extensive time period from the Middle Neolithic at least until the Early Bronze Age (5000-1500 BC) (Adamo 1989:13; Leighton 1989; Tusa 1997:125). The axes are often completely pristine and unused, and it has therefore been assumed that the axes were redistributed as status symbols rather than practical objects. Stone axes were distributed over a relatively large area of the central Mediterranean (Skeates 1995). Secondary deposits are not frequent, but nevertheless are known, from later archaic and even Hellenistic times (Leighton 1989:136)

What was the axe doing in the mid sixth-century layers at Monte Polizzo? The most likely explanation for the presence of the axe is that it had been encountered by the inhabitants somewhere in the surrounding landscape. It is quite unreasonable to believe that the axe had been kept for thousands of years. Therefore, it is unlikely that we are speaking about a traditional object in an archaeological sense. Rather, it is plausible that collecting axes was an attempt to establish a link with the past; to past practices, past traditions and to past ancestors. We can only guess how the inhabitants at Monte Polizzo related to these objects, but the ownership of an axe may have been a symbol similar to that which Annette Winer defines as an inalienable possession:

The primary value of inalienability, however, is expressed through the power these objects have to define who one is in an historical sense. The object acts as a vehicle for bringing past time into the present, so that the histories of ancestors, titles, or mythological events become an intimate part of a person's present identity. To lose this claim to the past is to lose part of whom one is in the present. In its inalienability, the object must be seen as more than an economic resource and more than an affirmation of social relations (Weiner 1985:210).



Fig. 6 The anthropomorphic/zoomorphic dipper from house 1 is more rounded and well proportioned. The zoomorphic elements are also less accentuated.

Seen in this light, the keeping and collecting of stone axes might thus refer to older Neolithic and Bronze Age ancestors. Perhaps this practice was related to a form of genealogy where material objects were used to underline a local identity using traditional practices of which only the objects remained.

Traditions in context

By placing the use of tradition in context with the economic, political, social and environmental backdrop in western Sicily during the Iron Age, we can enhance the prospect of understanding why local communities, like the one at Monte Polizzo, used traditional elements in objects and in practice.

The world around Monte Polizzo changed rapidly during the seventh-sixth centuries BC. Recent pollen diagrams shows a dramatic change in landscape use, and the thick oak forest were cleared and gave way to a much more open landscape (Tinner et al. 2009). This in turn altered the fauna; the deer became scarcer alongside the receding forest. It is possible that the deer, which had been worshiped throughout the centuries, also became a symbol for the traditions that were increasingly more difficult to perform, such as deer hunting. This could explain why the inhabitants, with great determination, created public buildings in remembrance of old Bronze Age huts - buildings which they danced around with headdresses made of deer antlers (Morris et al. 2004). Increased rainfall, the clearing of the forests and the alleviation of the valleys meant that during the seventh-sixth centuries BC the area around Monte Polizzo became one of the most fertile regions of the whole area (Stika et al. 2008; French 2010:49-52). The changing landscape was probably also one of the reasons behind the adorning animal-human figures on the ceramic vessels. The dippers were found in habitation contexts and were probably used in ceremonies in the domestic sphere (Mühlenbock 2008:110-112).



Fig. 7 The polished stone axe found in house 1. The axe probably derives from northern Italy.

Here, they possibly acted as metaphors for the agrarian cycle and the grain which provided the inhabitants of Monte Polizzo with their daily bread. The zoomorphic/anthropomorphic dippers are therefore excellent examples of how traditional media - dippers with figurative handles - were maintained although the figurative representations changed considerably from vague animal allusions to more pronounced figurative representations, possibly depicting certain individuals or deities.

The stone axes are a different matter; these objects were probably rediscovered in the surrounding landscape and were therefore relics from the past. The objects were perhaps encountered as a result of changes in land-use. New areas, such as old Neolithic settlements, were cultivated by the local farmers, and in these circumstances axes were encountered to such an extent that they became objects which were distributed throughout the community. It is true, that three axes is a small number, but considering that we have probably only excavated a minor portion, perhaps less than 0.5% of the settlement, it is possible that collecting and exchanging objects from the past became an important sign of cohesion among the inhabitants of Monte Polizzo. Axe collecting is most probably related to a widespread curiosity about a past that became more relevant to the inhabitants of Monte Polizzo when the very turf they stood on was threatened. Collecting axes is also, more than the other traditional forms, more closely related to single individuals in their attempt to claim a specific position in society. In this sense, the axes might have been extremely important as markers of being in the world. This was true not only in relation to the local landscape, but also to ancestors who once inhabited it.

Conclusions

The examples provided in this text all draw on tradition in objects and/or in practice. The traditional elements at Monte Polizzo were either used to apply an imaginative connection to the past, to enhance human-human and/or human-animal relationships or simply to include new meanings in an already well known

reality. I have tried to demonstrate that tradition has many faces. Tradition and the use of traditional elements seems to be as ever-changing as most other aspects of society. The consequence of this is that when we label a community or a region as traditional it can be worthwhile to examine the mechanics behind such an epithet. I have highlighted a few examples where traditional practice and traditional objects do matter. These examples show that tradition, in its widest definition, transcends most forms of human interaction and practice. Tradition is part of everyday life, just as new things are; human encounters and relationships are often integrated with what is already there. Here, we can talk about a dialectic relationship between tradition and invention. All in all, traditions - like most human practice - are designed to serve the needs of the present rather than being dull, conservative fossils from the past casting petrifying spells upon passive human subjects.

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GOLDEN NODES – LINKING MEMORY TO TIME AND PLACE

Elisabeth Arwill-Nordbladh

Abstract: Based on a specific type of artefact, a little golden pendant, this article is an attempt to demonstrate how material objects can be used in interactions with various memorial practices.

Applying four case studies, it is argued that material culture, such as these pendants, is active and full of meaning. Through various memorial techniques, like incorporation into old monuments, revitalizing ancient customs, inventing traditions and passing an object through a chain of generations, material culture is provided with a number of possibilities for playing an active part in social dynamics. Memories – as well as oblivion – are thereby included as essential and timeless social themes.

Keywords: Memory, memorial practices, gold berlok pendants, Scandinavian Roman Iron Age, Scandinavian Viking Age

Introduction

For people of today, perceptions of the past can support various personal and social ambitions. Such notions may for example encourage ideas of a common origin and shared identities while at the same time they might mark specific distinctions against ‘the other’ (Anderson 1983). Most likely, notions of the past were also of importance for people in ancient times. As archaeologists, we now and then encounter prehistoric contexts where references to bygone times seem to be particularly noticeable (see for example Bradley & Williams 1989; Chapman 1997; Bradley 2002; Artelius 2004 and in this volume).

Memory, time and place - some clarifications

Memory appears as a central theme intermeshed with *the past in the past* (Bradley 2002). As an overriding field of research, memory has promoted a number of sub-themes. Ground-breaking is Halbwachs’ (1992 [1950]) conceptualization of the collective memory – with Climo & Cattell’s (2002) understanding rather formulated as the social or cultural memory. Mauss’ (1992 [1934]) research, and in his footsteps that of Connerton (1989), are also fundamental, with memory being rooted in bodily experiences, while Nora’s (1989) discussions of memory are linked to place and something which attaches to concrete matters. With this background, many archaeologists point out the social and cultural dimensions of memory, brought to the fore by human agency. *What* we remember will be shaped, reshaped and transformed by *how* we remember. Such a memory-work is not neutral, and it may also be related to its negation, oblivion (Geary 1994; Forty & Küchler 1999). It is therefore important, while studying the archaeological evidence, like artefacts, monuments, landscape and place, to search for their potential in various societies’ memory-work, memorial practices and memory politics (for example Rowlands 1993; Van Dyke & Alcock 2003; Williams 2003; Delvin 2007; Jones 2007; Barbiera, Choyke & Rasson 2009; Chapman 2009; Lillios & Tsamis 2010).

Since memory and memory-work can be linked to personal and individual experiences as well as to society’s more organized memorial practices and memory-politics (Renfrew, Gosden & DeMarrais 2004:2), memory keeping may be part of a number of social cohesions and various social levels. The material objects, which eventually will constitute the archaeological evidence, will be involved in such processes, being part of a number of

social actions, or performative practices, that shape memory. The polysemic character of material culture, promoting an emphasis or a displacement of meaning, and providing a capacity to form contexts, enables objects and other material phenomena to be exceedingly potent for launching memory-work in for example ceremonies, rituals and other practices. Artefacts and monuments can be taken care of, they can be kept and nurtured over time, they can be altered and given additions, they can be part of combinations – and they can be concealed, hidden, destroyed or ruined. Artefacts also connect space, place and geography. They may be moveable and can be placed in new, unexpected contexts. In contrast, when tied up with its place, a stable, situated anchorage will be created. Also the human body, while possessing its specific physical and cognitive variations, age and gender attributions and social affiliation, can be considered a situated locus. Space can also be connected to a socially interpreted landscape, thereby creating a *place*.

Just as important is the material culture’s association with *time*. The time for creating and using material phenomena may indicate a mythical origin and ancestors, continuity or break, tradition or novelty. Style and technique may signal a now and a then, and the maintenance donates a promise of a future. Artefacts can also indicate an effort to attach to traditions and past times through selective imitations (Hobsbawm 1983). By its concrete character, the material culture can support a learning process as a *mnemonic device* (for example Fernstål 2007), and as a *trigger* it can cause a dormant memory to appear. The durability of an object may offer individuals the possibility of experiencing a depth of time. This can be made conceivable by measures like generations or man ages, forming a link both to origin and future. To summarize, it is most likely that material phenomena obtain a particular and important agency in such social dynamics that is connected to memory-work and memorial practices.

In this context, the *narrative*, or the interpreted course of events presented as a told unit, is fundamental (Chapman 1997:138; see also Burström 2012). Such narrations can be constituted of sheer tales and life stories, linkable to both beings and things. The associated objects can be given names, biographies and power. By their material character they can be understood as narrative evidence. For instance, through its existence *per se*, an ancient grave may lay claim to origin, and with archaic references and associations with the past it will be able bring the past back to



Fig. 1 The gold berlok pendant from the grave Dalstorp 61, Västergötland, Sweden, and the two gold beads that were found in the same grave. This berlock has an angled profile, many others, however, have a rounded profile, reminiscent of a pear, which has given the type its name 'pear-shaped berlok pendant'. Photo: Ulf Bruxe, The National Historical Museum, Stockholm.

the present. Making bygone days visible, the past might saturate a whole landscape (Chapman 1997:138-141).

Based on a specific type of artefact, a little golden pendant, this article is an attempt to demonstrate how a material object can be used in interactions with various memorial practices. Through its connections to memories, the object and sometimes also the context of which the object is a part, can be understood as a memorial node. Just as material nodes can shape networks and tie people and places together (Knappett 2012), they can also link up memory, time and place.

Something Old, Something New... Networks and Alliances during the Scandinavian Roman Iron Age

Golden charms

During a limited time of the Scandinavian Roman Iron Age, approximately AD 100-150/200, a small piece of jewellery was made in Northern Europe, named by archaeologists as *the pear-*

shaped berlok pendant (Fig. 1).¹ It constitutes a very distinct type. Made of gold (rare exceptions are made of gilded silver), it forms a hollow, pear-like or up-side-down drop-shaped pendant with a band-like loop on top. Its profile exhibits either a rounded or angled shoulder. It is usually decorated with patterns of plait-like filigree or granulates. The end always shows a cluster of small granules, almost similar to a bunch of grapes.

The form is extended to northern Germany and Poland, Denmark, parts of the coast of Norway and to the south and middle of Sweden. A few examples are found elsewhere. In all, a little more than 150 such golden charms are known, of which more than a hundred have been found in Scandinavia (von Müller 1958; Andersson 1990, 1993, 1995, 2011). They are concentrated in regional clusters, mainly on Jutland, the islands of Funen,

¹ The first thorough study of the pear-shaped pendants was made by von Müller in 1958. He named the type *Birnenförmiger Anhänger* or Berlocks, a name that was subsequently followed in Swedish studies. In English translations of Swedish literature the object is usually called a berlok /berlock pendants or just berloks (Andersson 1993: 270). In this text I will call the type pendant, berlok or berlok pendant.

Bornholm and Öland, and in the Oslo fjord area. Kent Andersson, who has studied the gold-working craft of the Scandinavian Roman Iron Age, is of the opinion that the regional clusters reflect local workshops, distinguished by technical and stylistic features. Even if the berloks were produced in local workshops and spread within a regional area, many researchers say that the idea could be a northern expression of forms inspired by the Etruscan culture or an area of the Black Sea, thus constituting a North European super-regional expression of identity (see for example Andersson 2011). Liv Helga Dommasnes even considers it as a North Germanic identity (Dommasnes 2006: 68, 115, 2008:87). Within this ethnic entity different subgroups stated certain regional or local positions (see also Andersson 2011: 32-34).

Most berloks are found in graves, and osteological analyses have shown that the graves were generally those of women. Thus the berloks constituted part of the high status feminine appearance. Many items have traces of considerable wear, and Andersson believes that the pendants hung on a piece of string around the neck on a more or less daily basis (Andersson 2011:32).

To link into a distant past – the berlok from the Lower Haga Dolmen

In Bohuslän, on the Swedish west coast, a concentration of megaliths from the late Early Neolithic/early Middle Neolithic constitute a northern part of the megalith tradition of the Atlantic coast, making a significant impact in the landscape. In 1915, as part of a major research project, a number of them were excavated (Enqvist 1922), among them Raå Stala 86², better known as the *Lower Haga Dolmen* [*Nedre Hagadösen*]. This monument was raised in a landscape shaped by small mountains cut by rift valleys, which in Neolithic times were islands and skerries in an archipelago with numerous bays and straits.

The grave chamber of the Lower Haga Dolmen was originally made of five stones covered by a roof stone. At the time of the excavation one wall stone was missing, giving the chamber an impression of an accessible room. In the chamber a few artefacts from the Middle and Late Neolithic were found, which is quite common for the megaliths of Bohuslän (Sjögren 2003: 106-11; see also Holtorf 1998). However, another feature was extremely unusual. The excavation report informs us that: 'In the top layer [of the yellow sand] in the centre of the grave, a small cairn of rather big stones was uncovered. [...]. Between and below the stones of the cairn a lot of coal and burnt bones were found, which clearly showed a secondary burial from later days' (Enqvist 1922:74-75). This mixture of sand and coal filled a pit of 80 cm in diameter, which had 'destroyed' the stone floor and reached almost down to the bottom gravel. This astonishing find turned even more surprising when two artefacts, dating the secondary burial to the Roman Iron Age, appeared. One object was a bronze brooch of Almgren's Period IV (see for example Almgren 1914:36, fig. 56), the other was a pear-shaped gold berlok. They had both been placed on the funeral pyre, and in particular the berlok was deformed by the heat, to such an extent that it is now difficult to attribute it to any sub-group. Nevertheless, the artefacts show that the second burial at the Lower Haga Dolmen had taken place more than 3,000 years after the erection of the megalith.

So, probably a woman, most likely connected to the Oslo fjord area as it is the closest 'berlok region', indicated her belonging

to society's top strata by using her golden pendant. She also communicated that she belonged to a wider North European cultural circle, thereby creating a different position in relation to the local community. This difference might have been bridged in an attempt to fit into the local, by following local burial practice, in particular allowing the set of jewellery, the fibula and the berlok, to be part of the funeral pyre; according to Andersson's (1993) survey of finds, heating deformation of gold berloks is most rare. However, the local custom was not followed in its entirety, as the debris of the cremation was not buried in an urn and placed in a small stone- and-earth-filled grave on a grave field. Instead, as in a process of hybridization, a more unusual practice to link to the local was chosen. In a very manifest way, the remains of the dead person were literally incorporated in an old monument, which since time immemorial had been part of the landscape, giving it a specific value as a social memory. By using it, and transforming it in certain ways – according to the excavators' opinion the opening up of the grave chamber by removing one of the wall stones, was a prelude to the Iron Age burial (Enqvist 1922:75) - connections to earlier time were established. By linking the novel into an ancient monument, which was also part of a regional characteristic, origin and times past were appropriated by 'the new'. Maybe this was of particular importance for someone who, as the gold charm suggests, had her identity based somewhere else. It might be worth mentioning that the same kind of linking between 'the old' and 'the new' as represented by a berlok-grave has been observed by Liv Helga Dommasnes on the Norwegian west coast (Dommasnes 2006: 68-69).

In this way the very place, possibly distinguished with a name, myths and tales, could serve as a locus for anchoring such phenomena that were different, new or alien, into the local community. Through the new funeral, more stories and references were attached to the place and the monument. A memorial place got additions and a *milieu de mémoire* (Nora 1989) got a vitalizing injection.

Accommodating tradition – the berlok from Dalstorp

In the 1970s, a cairn from the interior of the county of Västergötland, was excavated and yielded some unusual finds. The grave *Dalstorp 61* (Furingsten 1984, 1985, 1986) was situated in a vast mountainous area interspersed with good arable land. By the lacustrine and riverine systems there is access to the Baltic in the east and to the North Sea in the west. The predominant prehistoric monuments are usually solitary forest cairns dated to the Bronze Age. At the end of the Bronze Age, these were followed by low stone settings, smaller in size, still solitary but placed on a slightly lower mountainous level than the cairns. At the end of the first century BC this custom was replaced by burials gathered in small burial sites with graves built like low earth-and-stone filled stone-settings or mounds, which in the Dalstorp area were often formed like stone circles, so called *domarringar*. Over 2,000 years, from the middle of the Bronze Age about 1000 BC to the end of prehistory, with very few exceptions, people practiced cremation burials.

Dalstorp 61 was located high up on a moraine ridge, however not at the highest level. With a diameter of 12 metres and height of 70 centimetres, along with other constructional features, it left no doubt that it should be classified as a cairn. Yet, the deviations in location and its rather low height made the excavator, Agne Furingsten, state that the grave had some affinities with a stone setting (Furingsten 1986). Over time, the cairn had been damaged but two-thirds was still left. Among the observations were traces of

² Raå means Riksantikvarieämbetet (the National Board of Antiquities), Stala 86 is heritage site number 86 in the parish of Stala, situated in the county of Bohuslän.

a wooden coffin, indicating that it was an inhumation grave. Due to the acid soil, all remains of the corpse had decayed, but many artefacts were still there. Some specific objects indicated that the person buried was a woman. Among these was a spinning whirl made of glass, probably originating from the Roman provinces. Bronze mountings for a little chest and a key of a type which has been found in Denmark, dated to Roman Iron Age, have been suggested as early indications of private ownership (Furingsten 1986:17; Andersson 2011:36). The excavation team was amazed to find a little bronze pin with a duck on top. When first seen, the duck still had string-like textile fibres around the neck (Furingsten 1986: 28). The pin has no exact counterparts but the duck was a significant motif in the much earlier Hallstatt iconography and may thus convey connotations to times past. However, the most remarkable objects were three pieces of gold jewellery, two of them spherical, granulated beads and one a gold berlok (Fig. 1). This combination is also known from graves in Jutland and the Oslo fjord area (Andersson 1995:51). According to Furingsten (1984:126) the different artefacts, and particularly the berlok, connect the woman from Dalstorp 61 to society's uppermost level of the cultural sphere in south-west Scandinavia.

The cultural articulations in Dalstorp 61 may indicate that both the past and the present were of importance. If the little duck was part of the Hallstatt tradition, it might have signified a connection to the old days. In contrast, the gold beads and the golden berlok must have been a novelty, representing the contemporary trans-regional network which existed on both sides of the Baltic coast. Maybe the woman in the grave Dalstorp 61 was participating in an expansion of this network, perhaps as a marriage partner, bringing something new and foreign into this local community. Also completely novel and different from local custom was to carry out the interment as an inhumation. This was, however, the usual praxis for many high status burials in southern Scandinavia. A common feature, both in south Scandinavia in general and in the local area of Dalstorp, was to bury the dead ones on burial sites with several graves. Here Dalstorp 61 differs. The solitary cairns and stone settings represented a long remembered tradition of one and a half millennium. This ancient tradition, abandoned maybe only three or four generations earlier, was – but only concerning the exterior – recaptured by those who built the Dalstorp 61 grave. Thus the cairn, with connotations of permanence and ancient habits could connect to the past in a very manifest way. However, could the diverging tendencies which can be observed in the Dalstorp burial have been part of a strategy including both innovation and tradition? Traits like exotic, modern jewellery and an 'interior' burial performance of unfamiliar character reveal an influence from high status groups from the south, maybe as a result of exogamy networking. Have these novel features been counterbalanced by an effort to connect to past times? Can the reappraisal of an ancient grave-form, assigning an archaic touch to yet another spot in the landscape, be interpreted as an attempt to point out and claim a time-honoured affinity? Maybe even a genealogical return?

Eight Hundred Years Later ...

Inalienable wealth and invention of tradition - the berloks from Aska

In 1920, during farm work at Aska frälsegård in the county of Östergötland, a minor grave mound was discovered on a small Viking Age grave field. Though partly damaged before the arrival of archaeological expertise, there remained many interesting observations to be made (Arne 1932). The mound covered an

extensive layer of coal and soot which also contained burnt bones, which a modern analysis has showed to be the remains of a woman aged between 18-44 years. A horse, two dogs and a sheep or goat had also been placed on the funeral pyre (Jansson 1996:42). The grave items displayed a broad geographical range, like a bronze bottle of oriental origin and a bronze bowl made in Britain or Ireland. Moreover, the artefacts also pointed to broad chronological references. The most recent artefacts, two oval brooches of bronze, date the burial to the second half of the tenth century AD (Arne 1932:122). These objects connected the buried woman with the contemporaneous wealthy Scandinavian women (Arne 1932:97; Jansson 1985:91), as did a trefoil silver brooch and a number of beads of glass and rock crystal. However, a remarkable find was an iron rod, an artefact which has been interpreted as skewer, a measuring rod or a staff for a Völva, a kind of prophetess (Arne 1932:109; Lundström & Adolfsson 1995; Price 2002; Gustin 2004). Such evidence, and even more not mentioned here, indicate that the woman buried in the Aska grave possessed an extraordinary place in society.

For this discussion, which focuses on memory from various angles, attention will be paid to nine small gilded silver pendants found in the grave. While recapitulating the biography of these pendants, different phases, or locations on the scale of narrated time, can be distinguished. On closer examination, the objects reveal that they may be associated with different depths of time, thus conveying, and maybe triggering, stories and memories from the past (Arwill-Nordbladh 2008).

The temporal sequence started with the buried woman's own time, as one round pendant's ornamentation and style was connected to the filigree technique that developed in Scandinavia in the ninth and tenth centuries (Fig. 2; Jansson 1996:41). Three objects point to the time around AD 800, thus they were about 150 years old when placed in the grave. This corresponds to 5-6 generations. Two of these objects must at some time have had their field of application transformed. One was first meant to be a mount, and when a loop was fastened it was transformed into a lozenge pendant. The other, hollow in shape, must originally have been mounted on the tip of an item like a knife, stylus or the like. Getting the loop added, a most unusual pendant was created; the ornamentation depicted a man's face with staring eyes, moustache and a pretzel-like mouth whose nose, eyebrows and ears also formed the beak, wings and claws of a bird of prey (Fig. 2). This theme of a corporal metamorphosis between man and animal was familiar in Scandinavia in the Late Iron Age, both within myth, iconography and personal name-giving (Hedeager 2011:61-89; Jennbert 2011). Both the non-figurative animal-style ornamentation and the figurative art were permeated by the idea of man and animal as transformative beings, and as Hedeager (1999) has pointed out, the bird of prey in particular was connected to the shamanistic aspects of the god Odin. Such man/animal transformative traits can be tracked back to the Migration Period. Thus, although chronologically fixed to the early Viking Age, the pendant, perhaps kept as an amulet, may refer to mythical tales, perhaps connected to gods, notions of origin and ancestry which survived and must have been recapitulated for 300-400 years.

The third pendant, which due to its style and worn condition is dated to about AD 800, shows a miniature figure of a woman, standing *en face* and dressed in an ankle length robe (Fig. 3). The figure is placed in a circle, which leaves the head above the ring. On the head are traces of a loop, now broken off. The circle is shaped like a serpent, biting its own tail. The snake's head is placed at the woman's throat and, as if it was meant to be an



Fig. 2 Gilded silver pendants from the Aska grave. The grave is dated to about AD 950. On top: the five berloks similar to the gold berloks from the Roman Iron Age. Bottom left: a round pendant disc of typical Viking Age style. Bottom right: the socketed man's head with a bird of prey on the head. Photo: Christer Åhlin, SHM, Stockholm.

illusionary trick, the head also looks like a gigantic brooch. This brooch has been identified as a disc-on-bow type, which was primarily used in the Late Germanic Age. Under the brooch are four rows of beads, a feature that underlines the association with this time, as the combination of disc-on-bow brooch and a four-rowed set of beads are depicted on mountings and figurines from this age (Arrhenius 1962). Thus, this gilded charm which might have been used for 150 years before it was placed in the grave, refers to an archaic set of jewellery and an image theme which was already a couple of hundred years old when the object was made.

The figurine shows other unusual traits which could refer to various stories. One clear corporal feature is her round belly, demonstrating a pregnant condition, thus linking to narratives of fertility, sexuality, birth and regeneration. Referring to the gigantic disc-on-bow brooch, Birgit Arrhenius has suggested that the figurine was a representative of the fertility goddess, Freya, wearing her mythical brooch (Arrhenius 1962). The pendant may also point to a narrative theme, which can be connected to the discourse of bodily variations and abilities (Arwill-Nordbladh 2012). In this discussion focus is on vision and sight, a capacity which might have been articulated in various ways in the North European Iron Age (Price 2002:387-388; Helmbrecht 2011:144, 168; Williams 2011; Nugent & Williams 2012). Such variations, sometime as an exaggerated capability and sometime as a seemingly mutilated function, could imply an ability to see into hidden worlds, to prophetic vision or wisdom. On the face of the Aska-figurine, the area around the eyes in particular appears to be diffuse and worn, as if it had been exposed to manual abrading like rubbing or another kind of wear and tear.³ Maybe this charm was



Fig. 3 The figurine from the Aska grave. This gilded silver pendant portrays a woman encircled by a snake. The snake's head also depicts a disc-on-bow brooch, a type which was several hundred years old when the grave from Aska was interred. Photo: Gabriel Hildebrand, SHMM, Stockholm.

³ As a matter of fact, such traces of abrasion are discernible on the belly, which might emphasize aspects of fertility.

used in performative practices, where the eyes, sight and vision were repeatedly brought to the fore.

A third narrative theme may be discerned by the figurine's body, being encircled by a snake biting its tail. This could allude to the myth of the Midgård serpent, surrounding the world. As long as the creature kept its grip on its tail, the world's balance between order and chaos was kept (Hedeager 2011:85). Giving up the grip denoted the beginning of the world's destruction. With this interpretation, the image of the pregnant woman encircled by the snake could represent narratives of the budding life's continuity and balance before Ragnarök.⁴

With interpretations like those presented above, these pendants can be understood as mnemonic devices in a memorial practice that went on for about 150 years. Some of these recollections could be part of still older narratives from a distant past. Here we see an example of a continuous memorial work in a living *milieu de mémoire* (Nora 1989), grounded on a memorial technique based on bodily practices like displaying the objects on the costume at performative events. Maybe the responsibility for keeping and preserving the memories of a specific group such as a family or a kin, was assigned to a special person. Objects like the pendants which were found in the grave of the Aska woman could perhaps, as repositories of tales, have been heirlooms, transmitting memorable knowledge to further generations. Kept as *inalienable wealth* (Weiner 1985), new events could give additional meanings and physical alterations, which would increase their value.

The Aska grave demonstrates yet another policy towards memory. T.J. Arne, the archaeologist who published the find, stated that its 'most enigmatic objects' were five gilded silver pendants which showed a striking resemblance with the gold berlocks from the Roman Iron Age (Fig. 2). Style and technique undoubtedly showed a Viking Age origin, nevertheless Arne stated that there must be some connection with the ancient type. Perhaps the form in one way or another could have survived in the east or elsewhere, possibly 'in a vegetative way', and now, as a part of the Carolingian tradition of filigree, it turned up in Sweden (Arne 1932:96-97). This idea was followed up by Ingmar Jansson who suggested that they were made by a Scandinavian silversmith sometime during the tenth century AD 'after old berloques found in the earth or, perhaps, inherited' (Jansson 1996:41-43).

Such a course of events can be an example of what Eric Hobsbawm (1983) characterizes as an *invention of tradition*. By remaking practices and attributes in an attempt to show an unbroken continuity with times which were supposed to represent positive and much desired values, a link was established to – a chosen – past. In this way, the past was intended to support ideas of the present. Details, in this case material, technique, and style, revealed that this was not an authentic link but instead an effort to mimic the old original. Such a course of events created a novelty, carrying notions of the past that originated in the present.

Fragments of a distant past – the pendant from Birka

Bearing in mind the imitative nature of the Aska berlocks, one could ask if it would be realistic to believe that such objects were made with an 800-year-old model at hand. Unfortunately we

know very little of the life biography of the pear-shaped berlock. Obviously most objects had already been placed in graves in the Middle or Late Roman Iron Age. In a few cases, berlocks have been deposited in contemporary hoards (Jensen 2003:367). A find from one of the graves in Birka gives us another glimpse of the life-biography of this object type.

In Birka, on the island of Björkö in the lake Mälaren, where Hjalmar Stolpe conducted extensive investigations during the last decades of the nineteenth century, grave *Bj. 606* is of interest to this discussion (Arbman 1943:198-200). The grave had a central location, close to the opening of the north fortress wall. It was an inhumation – only some teeth remained – and the jewellery indicates that it was a woman's grave. As for the Aska grave, two oval brooches (Jansson 1985:204) situate the buried woman among high-ranking people, dating the grave to the early tenth century. In addition to these common objects, the grave also contained some rare pieces of jewellery. One was an equal-armed brooch of silver decorated with filigree. Władysław Duczko (1985), who has studied filigree work from the Viking Period, states that it is most unusual, having only one counterpart, a brooch from Møre on the west coast of Norway. These two objects are, so similar that Duczko assumes that they were manufactured in the same workshop, probably in the Frankish area (Duczko 1985:91). Along with this Carolingian silverwork, the grave also contained objects of eastern origin, namely 13 heavily worn silver mountings, which had been remade into pendants. Yet another unusual silver pendant in the shape of a little bucket was in the grave. More than 30 beads, five of them of silver, were also part of the gravegoods.

The most spectacular find, however, was a little charm, identified as the drop- or 'bunch-of-grapes-looking' end piece of a gold berlock from the Roman Iron Age (Arbman 1943:199; Duczko 1985: 71-72; Andersson 1993:236). A small part still remaining at the side had been reshaped into a thin plate with a hole. Here a small silver loop was fastened. At least two of the granules, which in their turn could have once carried smaller grains, were missing.

The central location of the grave and the distinctive artefacts indicate that the buried woman belonged to the upper echelons of Birka. The geographical references both to the east and west fits well with Birka as a meeting point for various cultural influences. Just as in the example from Aska, some objects had their original use reformulated and made into pendants. They were thus meant to be displayed in a feminine-gendered bodily practice. Many of the pendants were heavily worn which indicate that they were old when placed in the grave. This suggests that the buried woman not only could be connected to a varied geography but also to a certain time depth. Yet, it is the little golden pendant which makes the grave outstanding. Being 800 years old, it is one of Birka's oldest objects (Arrhenius 1976: 184-185). However, it is impossible to know when and how the pendant got its final shape. It is also impossible to know the length of time it may have served as an iconographical reference and memorabilia in relation to the gold berlocks of the Roman Iron Age. What we can say is that it was possible for this type of object, modified or not, to exist over time and space. During its long existence it may have passed more than 30 generations as a gift, heirloom, barter, booty – or just a serendipitous find in the earth, thereby obtaining different histories. The reformed look of this specific charm suggests that it has had a chequered biography. Once or more it might have been part of networking processes based on principles of fragmentation (Chapman & Gaydarska 2006). Presumably, the long time span involved was not understood in the way we can appreciate it today,

⁴ A close look at the figurine provides a slight suggestion that this imagery may have been repeated. The figurine's arms that embrace the round bosom seem to show a pattern like a snake's skin, perhaps as a metaphor for reinforcing the desire to keep the world in balance.

but nevertheless narratives connected to a distant past are most likely a part of the *berlok*'s identity.

Discussion

Memory and place, memory and time

The two cases of Haga and Dalstorp indicate places that were installed in the landscape, anchoring something new and foreign into the old and local. For Haga, the removed wall stone of the megalith was a mark that caused a remaining visual change on something locally significant. The monument and its connotations with ancient times were appropriated, thus incorporating the non-local with the place. For Dalstorp, an ancient grave form was reshaped in a modified way. The visible exterior displayed a revitalization of an old tradition in a way that, if it happened today, might be called a pastiche. For both Haga and Dalstorp, the *berloks*, buried in an old 'package', represented something non-local and highly up-to-date, signalling a belonging to both regional and trans-regional high-ranking circles. Thus the *berloks* served as material nodes in this socio-geographic structure. Authorizing the extension of such a structure by connecting with various local arenas meant negotiations between the local and the foreign. The *berlok*-users in Haga and Dalstorp connected with the local by linking it with its past, attracting attention in a provocative and somewhat ostentatious way. Simultaneously, both burials showed an outright resistance to accepting all local habits of the funeral practice, as there was also a demonstrated difference from the local present. Using the old and the new in a way that almost 'creolized chronology', the past could be part of a social memory cast by a memory politics of the present.

The five Viking Age *berlok* imitations from Aska and the little *berlok* fragment from Birka invite reflections about the possibilities for material objects to be active over an extended time. The two examples show both differences and similarities in a discussion about memory and time.

These burials were more or less contemporary and belonged to the upper echelon of society, still they were connected to different social settings. Living in tenth-century Östergötland, the woman who was buried in the Aska grave was part of a traditional community, having a genealogical geography that was attached to structures that were many hundred years old (Kaliff 1999). Anders Kaliff suggests that it is likely that earlier, for many centuries, there had existed a kin-based identification between groups in Östergötland and the southern shores of the Baltic, for example visible in the material of the Wielbark culture of the first to the early fifth centuries AD (Kaliff 1999, 2001; Kokowski 2010). Kaliff further tentatively suggests that in this context the notion of a gothic ethnicity emerged as a unifying force through mutual interactions, encounters and other kinds of movements primarily based on the relationship of joint task-grouping and reinforced by a kin-making networking, thus also sharing social affiliation. This scenario could be one background to those narratives of the Goths that appear in written sources many centuries later.

The nine gilded pendants in the Aska grave reveal that the buried woman had taken part in a number of meaningful enactments where notions of time and depth of time were in focus. Certain memories of times past must have been brought to the fore with the display of the pendants. The accoutered body was part of a corporally-based memorial technique intended to evoke recollections, thereby creating a living *milieu de mémoire* (Nora 1989). This ongoing memory process resembles the perspective

described by Bradley (2003) as *remembrance of things past*. In this context of memorabilia, hundreds of years old, the newly produced *berloks* would be an expression of an active wish to recreate a link to a specific historical narrative, what can be understood as an *invention of tradition* (Hobsbawm 1983), which in some ways has a likeness to Bradley's *search of lost time*.

These objects were part of a feminine dress code used in narrative performances of a dramatic character. Here knowledge could be handed over to new generations. By a memorial practice, associated with costume, sets of jewellery and performances using voice, facial expression, gesture and posture, these memories can be understood as *embodied memories*.

In many societies certain individuals were responsible for keeping group memories vivid (van Houts 1999, 2001). This was sometimes a gendered task as Elizabeth van Houts has shown, pointing to female medieval memorial practices in Europe (op. cit.). In the Scandinavian Viking Age there are some indications of a masculine gendered memorial responsibility, enacted in the performative practices by the male celebrant *thul* (Arwill-Nordbladh 2007 and references). With this in mind, a feminine memory-keeping practice can also be implied by evidence of the Aska grave. The buried woman could be understood as a person who treasured valuable and important tales; as two of the pendants were images of people, whether real figures, ancestors or gods, the narratives could have been connected to origin stories, indicating these as important themes to process. If the golden *berloks* from the Roman Iron Age, at the time when they were created, were markers for ethnicity, kin- or family groupings, these newly made Viking Age *berlok* pendants could have been part of an effort to claim a belonging to such an ancient category.

The social setting in Birka might have been different. The grave Bj 606 may be seen as a product of a vibrant society amid a swarm of activity; local connections with the adjacent Mälars area, regional cooperation with areas to the north in particular, and trade and merchandise contacts towards the east and the west resulted in a mixture of cultural and ethnic encounters. A burgeoning state formation process with a strong military presence, a densely populated town with workshops, crafts and contested religious affiliations, were all factors causing tensions. Some of these features must have impacted the life of the woman from Bj 606. Just as for the Aska woman, her jewellery must have been part of a corporal narrative practice. The jewellery had a geographical range from Oriental to Carolingian culture, contexts that were very prestigious and in vogue. The fragment of the 800-year-old golden charm most likely possessed references to a distant past, maybe diffuse, and perhaps treated as *the past as exotica* or just as an old amulet. However, recalling the Carolingian connections demonstrated by the exquisite equal-armed brooch, it might not be too far-fetched to keep the Carolingian Renaissance in mind.⁵ Within this body of thought there was a desire to connect to matters that were believed to be Gothic. If the gold *berlok* type, fictitiously or in actuality, had connections to the Goths, the pendant fragment in Bj. 606 might have referred to the item such as it once was, or forming an idea of the item and what it could represent.

⁵ Compare the suggestion made by Henrik Janson (2009:82) that the inhumation burial practice in the urban or proto-urban settings of the Scandinavian Late Iron Age should be understood as a desire to follow Western European ideals rather than, as is often interpreted, a specific Christian sign.

Memory and oblivion

Once the funerals had taken place, a process of forgetting also started. Just as memory is individual and social, oblivion too has a personal and a social facet. The personal forgetfulness can be both capricious and involuntary. The collective or social oblivion, on the other hand, is ‘mainly deliberate, purposeful and regulated’ (Lowenthal 1999:xi). Social oblivion is a result of a choice which exists in relation to that which should be remembered (Rowlands 1993, 1999). By choosing to place the memory-loaded jewellery in the graves, they were severed from social display. For the two amulets from the Roman Iron Age, a daily demonstration of something novel, and maybe superior, ceased, instead being incorporated as additional narratives to the old monuments. For the Viking Age berloks with their ancient connotations, the social and ritual contexts of which they were part reached an end and these specific narratives became silent. A chain of memory-keeping practices was broken off, and the work of forgetting began, which also included the replacement of new kinds of memories.

Conclusions

With a historical interpretation, a bit speculative I must admit, the pear-shaped berlok pendants in one way or another had received associations linked with identity, which were possibly to be called Germanic or Gothic. During the Roman Iron Age, some of the women who carried the berloks were participating in networking processes which involved a geographical expansion linked to social superiority. In order to legitimize such an expansive network policy, the leading groups wanted to mark a connection with local past times by *re-establishing* a link to ancient burial customs. During the subsequent centuries narratives may have flourished about Gothic or Germanic identity where a few berlok pendants were perceived as family memorabilia, transmitted for generations and even reinvented when necessary. At a certain time, these narratives were not important to maintain, and the memorial chain terminated. Society had changed to such an extent that these genealogical statements were no longer important. The burgeoning royal power and Christianity’s increasing hegemony are two probable causes.

In such contexts we can see how material culture, like the berlok pendants, were active and full of meaning. The material culture was imbued with a number of possibilities for playing an active part in social dynamics, where memory – as well as oblivion – were included as essential social themes.

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A CHOREOGRAPHY OF FURNITURE: THE ART OF SITTING, STANDING UP AND LYING DOWN

Jarl Nordbladh

Abstract: This essay deals with relations between prehistoric human beings and furniture, how organized spaces may serve to facilitate social co-existence and create scenes of daily life and important events. Examples are drawn from the Nordic Bronze Age and Early Iron Age in the Alpine area.

Keywords: Prehistoric furniture, bed, folding stool, throne, couch, spatial behaviour, sitting, standing up and lying down

Introduction

A proper tribute to a dear, old and respected friend and for many years head of the work place, the Department of Archaeology, subsequently Historical Studies, at the University of Gothenburg, Sweden, could – maybe a little bit odd – be to bring into consideration not only his position, but the very seat – the chair – from which many thoughts, ideas, actions, orders and decisions have emanated and been launched out into the world.

This is a short text about prehistoric furniture, which primarily is not typological, technical, chronological or geographical but rather an argument: social implications were most probably involved in the movement and appropriation of perhaps new and unfamiliar artefacts and arrangements. Further, meanings may have changed during their introduction and use. Often in archaeological contexts imports, traded goods and even booty is looked upon as rather unproblematic and rewarding features for the mission of archaeology, supporting our dating and connecting the local with a wider world. However, perhaps too much attention has been paid to the material dimensions, being to the detriment of what they once were determined for. It is not only technical matters, raw material, weight and glare, which affect a choice and a demand. It should also include experienced and mythical history, expectations and the social impact, which could arise from setting the objects in motion. Nevertheless, we should bear in mind that not all changes are successful. Some may fade away.

Focus is here placed on furniture, which is often regarded as rather static. However, it may be quite the opposite, being involved in the act of approaching, pointing out, inviting, connecting, positioning and honouring both more close relatives and friends, but also touching upon a wider world, where the local meets both peripheries and centre.

Three examples are introduced. They are rather well known by archaeologists, but the disciplinary split between prehistoric and classical archaeology has had the effect that common properties are not easily seen. I will bring to the fore the surprising folding stool from Guldhöj, Denmark (c. 1389 BC), the remarkable bronze couch from Hochdorf, Germany (c. 600 BC) and the image-loaded throne from Verucchio, Italy (c. 650 BC), all finds from scrupulously excavated and reconstructed burial contexts. In its original South-European milieu the latter sitting and resting device was often used together with a foot-stool (Steingraber 1979), an addition which has not been found together with prehistoric chairs in the far North.

Sitting, standing and lying down

How to move or to stand still is something which is mostly regulated by custom, as a practical, but also symbolic, system. To behave in a wrong or unrecognized way, to fall down or stumble, is often regarded as something which is unsuitable and may be insulting or the cause of public ridicule. When we walk we join two points in space, and a purpose with the movement could be estimated and followed up, encouraged or stopped. So, there are no neutral positions and one's actions are observed. Movement is therefore an active phenomenon which ties together people, objects and spaces and thereby creates and changes meanings. We all do this on a daily basis. It is possible that conduct very early in human history replaced plain behaviour.

When a body utilizes a piece of furniture, change is activated, and a consideration is brought to the fore. To sit is far from a simple act. It includes a positioning, self-chosen, offered or commanded, a lowering of the body, a placing and at the end, a rising. Sitting is a station en route, involved in lying down, resting, sleeping and dying. Of course there is a need of a reserved seat, which could be more or less comfortable, but comfort doesn't come first. Also the allocation of a space suitable for a seat is – in its seeming triviality – a decision of geo-political character. If you are the only person with a seat, other people have to remain standing or sit on the ground. A seat has a certain direction, absolutely a back side, and a certain height, all affecting how the set up is viewed and the look-out is kept. If the chair is the only sitting instrument, it points to separation, hierarchy, but also creates a feeling of solidarity. If several chairs are used together, the scene is different and more of a being together. The ultimate togetherness is to share a meal, a place, a bed (or even a grave).

It is clarifying that the German term for furniture, *Möbel*, and e.g. the Spanish and French *mueble*, as well as the Scandinavian equivalents, refer to something mobile (from the Latin *movere*). In this sense furniture can be seen as portable, pieces to be played with, to arrange situations.

The seating place can also be permanent, in a room or in the open air. The intrinsic prestige which follows from the chair can sometimes be occasional, as the seating apparatus could be mobile, moved and placed onto a wagon or onboard a ship, being a sedan-chair and being part of personal belongings, connected to a certain social position. The latter often seems to be the case, as many examples of furniture related to sitting are found as grave goods, above all in the Classical world. An unoccupied

chair may be reserved and not vacant, as the empty stool's inner and outer 'decoration' and position in space may signal to the assembly which person is missing and supposed to arrive soon. To offer another person a seat, including your own, is a rather extraordinary, self-less honorific action.

It is interesting to observe that furniture from the Mediterranean area may sometimes have legs imitating animals' paws such as oxen and lions, directed forwards (Wanscher 1955), so you could imagine what it might be like to sit, sleep or lie dead on a *lit de parade*, on top of a standing beast.

Furniture

The role of furniture in many Mediterranean homes from the Classical period can be understood from upper class grave finds, where folded tables, beds, chairs and stools indicate that furnishing could be rather flexible according to certain events or social meetings. Specific bedrooms are unlikely to have existed during prehistoric times, except for in more prestigious living conditions. In such cases the bed furniture could be seen as another version of the throne. For Northern Europe we have well-preserved bed furniture from the Viking Age, but there must have been millions of sleep-related items, which we have not been able to identify, probably because beds became furniture very late in history (Eden and Carrington 1961).

A coherent history of North-European prehistoric furniture does not exist yet, but very important and inspiring contributions have come from Danish architects, who, in collaboration with talented craftsmen, laid the historical ground for a successful Danish furniture design production beginning around the 1930s (Wanscher 1955, 1980; Svarth 1998). A rather rough, primitivistic view of prehistoric material culture was replaced with refined reconstructions, where the most slender design was to be preferred to a coarse and heavy variant. It even happened that a folding stool from a Danish Bronze Age mound was revitalized and put into production by the furniture industry, for modern use (Guldhøj Stool PH-41; www.classic-furniture.dk).

In Nordic folk culture museums there are a lot of different furniture types, which demonstrate very clearly a remarkable continuity in forms and chosen materials (Steensberg 1973). But it is not fully known for how long and within which geographical areas. Also, as types have been saved from destruction in mainly Mediterranean contexts, such as grave buildings, and then inspired new sets of historically-influenced furniture, the risk of temporal contamination is great. But some long-term uses of design are almost too long and difficult to understand. The use of swan-heads and swan-necks as stool-legs, which were quite common in Egypt in the fourteenth century BC was still(?) used in some cloister furniture in Austria in the twelfth century AD (Wanscher 1980: 29, 215). What is original and what is more or less a copy remains unclear.

Another sign indicating the importance of furniture are small-scale models, which are sometimes part of the decoration of graves, made of clay, bronze or iron. In my view, they may be interpreted as sets for performing plays or for commenting on situations, where the dead is incorporated as an actor in the model. Wheeled platforms carrying humans and animals together with separate human miniatures, animals and possibly ships were also manipulated to play out difficult circumstances (Schmid 1934).

The folding stool from Guldhøj, Denmark

The central find of a prehistoric folding stool in North Europe is quite old and was investigated – in 1891 – before more advanced methods of excavation and conservation were introduced, but the work was carefully done (Fig. 1). Inside the impressive mound of Guldhøj in Jutland three hollowed tree-trunks (Jensen 2002) were found and one of them, a man's grave, contained the dressed corpse, with weapons, drinking bowls and a rather well preserved folding stool, with a seat made of otter skin. No metal mounts were inserted, and the decoration was limited to the seat rails. The stool was placed at the leg-ends of the buried man. The three oak-coffins of Guldhøj are all dendrochronology-dated to the same year, 1389 BC (Jensen 2002).

Ole Wanscher, a Danish architect and historian of furniture, noted the original folding stool, as a prototype of this native item, far away in Egypt, with a date around the middle of the second millennium BC (Wanscher 1955). It is remarkable that folding stools of this type have been found in Danish-Swedish-German grave contexts, often in oak-coffins for males (Fabian 2009). For the moment there are no similar archaeological traces in the regions between the Mediterranean cultures and North Europe. The distribution area of these stools is rather limited: south Scandinavia and north Germany (a good map is available in Jensen 2002: 268). This specific range is as remarkable as the Mediterranean-Egypt connection. The wooden materials used in the north are also local. The prototype here must have been actual examples, later copied in indigenous woods. The construction may witness a desert origin, with the connected legs resting stable as stool-bars on top of some soft bed such as sand. As the stool is supported by the crossed legs at the sides, it would have become uncomfortable after a short time, hurting one's popliteal space, which could have been compensated for by the use of a cushion (Werner 1967: 38). Without a cushion the stool height would have been about 24 cm.

With its simple construction of two crossing, small frames the folding stool was a slender, light and mobile sitting device and a real innovation. It made a rather short visit in North European prehistory as we know it. It reappeared in the medieval period, and has remained with us since – in our days serving as leisure seats or the seats of actors and directors during film shooting.

The preserved bronze mountings are the best archaeological indicators of once existing stools. With few exceptions, only very limited wooden structures have survived. The mountings comprise metal plates, which would have been noisy, and which emphasize that the stools had two fronts that were interchangeable with each other. About nineteen northern folding stools have been discovered, all limited in date to the second period of the Nordic Bronze Age (c. 1500-1300 BC) and all of the same type, but with small differences in details (Fabian 2009). Some are simple, others have bronze mounts, sometimes with gold inlay.

The stool joins the same acoustic adventure as the soundscape of horses and wagons, lures, rattling sleeves of arm-rings – and the couch from Hochdorf. Some bronze mounts of a folding stool from Bechelsdorf, Germany have been found with leather remnants around the eye (Fabian 2009), maybe to silence the rattling of the noisy metal pendants in the same way that the pendants of the bronze lure from Långlöt, from the island Öland (Montelius 1969: 81 [1917]) were stopped from jangling. This indicates that silence was an important part of the ceremonial customs and protocol.



Fig. 1 A wooden folding stool from Guldhøj, Denmark, with remnants of an otter-skinned seat. Found within an oak coffin of a hollowed tree trunk, a male grave from c. 1389 BC. The National Museum, Copenhagen.

To understand what the actual sitting looked like, some help could be expected from seated figurines from the same time and area. But, unfortunately, miniatures like the woman from Faardal (Broholm 1953) and the axe-carriers from Grevensvænge are sitting on their heels (Djupedal and Broholm 1953). In addition, there is neither evidence from the figurative imagery of rock art nor from traces of wear on Bronze Age clothes.

The folding stools from the Nordic Bronze Age are probably related – as far as we know from the graves – to males, connected more to the person than to the social position, which seems to end with the death and the burial. However, the afterlife may also have necessitated the deposition of a seating device. The easily transportable folding stools indicate a travelling life of the distinguished person, a person who calls on situations and whose prestige and authority was not located in or associated with a certain place, building or a stationary honorary seat.

However, it is very surprising that the stools seem to have been partly damaged or dismantled for the funeral. They have been both withdrawn from life and at the same time made useless for the afterlife (Fabian 2009).

An elongated chair on wheels - the couch /sofa from Hochdorf, Germany

One of the differences between art history and archaeology is that art objects often have an existence in society; they are carried through the ages by people and handed down to new generations and geographies, establishing orbits of objects which have not interested art historians until recently.

In archaeology, however, materials are discovered and brought to the surface through excavation and arranged according to classification and archival needs. In this process – a sort of waking up to life again - unexpected materials may appear, totally unknown, new and sometimes even difficult to identify, in combinations or contexts which may be expected, well known and already within the canon of the discipline.

In south-west Germany, eastern France and Switzerland there are a number of mounds each with a central chamber, dating from Late Hallstatt to Early Celtic Age (c. 750 – 450 BC), which are called *Fürstengräber* or *Princely Tombs* in our times. These graves are of the same high status character, but individually different in terms of details (See also Olivier 2011 for deeper and intrinsic interpretation). They have produced very rich finds including imports from the Mediterranean of painted ceramics and metal containers, but also amber, gold jewellery and textiles. There is an emphasis on drinking to reinforce social solidarity, as evidenced by bronze vessels, cups or horns, which may have been used to consume imported wine or beer-like beverages (Enright 1966; Murray 1990; Craven 2007).

Weapons are often a dagger and sometimes a lance, but it seems as if armament in graves is not as spectacular as it was earlier in the Bronze Age. Together with the dead – most often a man – you may find a four-wheeled wagon standing inside the chamber, ready for departure, or exceptionally with the wheels taken off, leaning against the chamber walls (Koch 2006). Horses were lacking (Pare 1992). In western Bavaria, however, there is a small wagon grave group with horses in separate graves beside (Henning 2001). Many of these mounds have been robbed, perhaps even in prehistoric times, or were excavated in an earlier era with less care and knowledge (Biel 1985).

In Hochdorf, in the Kreis Ludwigsburg, Germany a much eroded mound was discovered and excavated with full scientific force in 1978/79, a grave that was not disturbed by robbery and which was remarkably well preserved. The sensational find comprised two oak constructions, one including the other, which consisted of a grave chamber, 22 m² in size, with three main components: the dead, a strongly built, quadragenarian man, lying on a piece of extravagant furniture, a wagon with harness and a set of dishes and plates, probably for nine people, and close to the feet of the dead, a large container in bronze with big handles and along the mouth three small lions, the volume of which was about three-hundred litres. The analysis of the remaining content suggests not wine but a honey-based beverage. Hanging from one of the walls was a row of eight drinking horns and a larger iron one, with a volume of 5.5 litres and an impressive length of 123 cm. Gold was used for details in the dress and on the iron horn, a necklet, a bracelet and a bowl. The well-organized chamber with its contents was – as an art object by the Bulgarian, contemporary artist Christo – wrapped in pieces of very thin and coarser textiles as if the chamber was not safe and closed enough. A thin membrane was thus placed between the contemporary and the future (Biel 1985).

In the context of this paper, the bronze furniture is the main item of interest. It resembles what later in time, in the Ottoman culture, was called a *sofa* (Fig. 2). The item (Biel 1985), pressed together by the surrounding stone foundations, was taken, baked in plaster, to a laboratory for closer excavation. The sofa or couch was 2.75 m in length, which is considerable and because of that it was necessary to find good support solutions for the seat. An approximate seat-height could be c. 37 cm. The piece of furniture was constructed from six large bronze sheets, riveted together on an iron structure and carried by eight small human figures in bronze, 32 – 35 centimetres tall, with their arms lifting the seat over their heads and rolling the piece on wheels, inserted between the legs of the carriers. These supports were made individually, their sex is not particularly marked (compared to other figurines of the same period), but small holes with inlaid pieces of coral on the arms, neck, waist and legs indicate where female jewellery used to be placed and therefore supports a determination of a female

gender. The human eyes are marked and the heads are directed somewhat upwards, like other figurines on wheeled platforms of other small sculptures. The four front figures are a little bit higher than those of the back-side, giving the inner part of the seat a sloping character (Biel 1985). It is interesting to compare the carrying woman on the Austrian Strettweg wagon (Schmid 1934) with the carriers of the Hochdorf sofa. They are very similar, but the gender is emphasized more on the conspicuous wagon figure.

The back of the sofa is strongly fixed to the seat by rivets. On both its sides are visible a series of images in a row, showing wagons surrounding three pairs of fighters, which look more duel-like than war-like. No victor is marked. On the wagons a man is standing with a shield and some sort of pointed tool such as a stimulus, a lance or a sword. There is no driver. The sex of the fighters is clearly demonstrated, as is the norm also on Scandinavian rock-carvings (Janson et al. 1989).

On the outside of the back, quite high up, are six handles, maybe 80–90 centimetres above the floor and twice the height of the seat. Originally, in each handle two chains were fastened. These details have traces of wear.

During the excavation a rather thick layer of mixed textiles, furs and leathers were observed on the seat and under the dead man, being part of the upholstery of the sofa. There is a discussion on the sitting technique on the seat, as it is quite uncomfortable without upholstery (Jung 2001). Even the capacity of the number of individuals sitting together has been discussed (op.cit. 2006) and of course there is no room for nine individuals, which were indicated by the drinking horns and the dining utensils. At the most there would have been space for five people, each located in front of a punched image.

The front edge of the seat sheets of the sofa have been rolled over an iron bar to stabilize and give some comfort, but by the construction under the seat, with combined carriers attached to an iron bar, it would have been difficult to get up from the seat without the help of servants. The piece of furniture is hardly a bronze version of a Mediterranean *kline* (Jung 2006:34-39). It is too narrow to allow a married couple to lay down one behind the other and it has no marked head end. It should be mentioned that in other excavated mounds there have been traces of the more original model of the *kline*, so there may have been customs of drinking while lying down (Fischer 1990).

The details on the sofa which are most surprising are the wheels, which indicate (together with the handles) the need for rearranging the furnishing of rooms or transportation to other localities. But the size of the wheels shows, that special floor conditions were required. They cannot be rolled on top of regular ground but needed hard surfaces such as a very smooth stone pavement or floor-boards. The sofa could only be rolled forwards or backwards or around, with the one end kept still and the other moved like a merry-go-round. In all this the handles and chains would be a help, but they seem to be too fragile to move the sofa together with its sitters. The position of the handles is placed too high for a functional lifting procedure. Finally, the sofa is too long to have been placed on the grave-wagon.

The once shining sofa is not a throne, but a much more open space and part of a social item, albeit presumably with the observance of the customary forms and ceremonies. There is no real backside, as the images on the rear and the divergent direction of the four hind

carriers indicates. In the social life of the sofa, much attention and acting would have been conducted from behind.

The throne from Verucchio, Italy

Verucchio is situated on a rocky hill, with an altitude of 330 m, in the Province of Rimini, some 14 km west of the Adriatic Coast and at the mouth of the Marecchia Valley. The Villanova remains are dated to 900 – 550 BC. On the slopes of the hill there are several necropolises with many hundreds of graves, often in deep pits and with a moist soil, which has been favourable for the preservation of prehistoric materials. Based upon topographical and material characteristics small, maybe family, groups could be identified within the cemeteries, where some very rich graves are present. However, ancient materials have been known for a long time, destroyed or damaged by construction work and early searching for treasures. Eventually antiquarian and professional archaeology was established, providing museums in Rome and Bologna with highly interesting exhibition items. Long term projects were started and today there is a local, prestigious museum displaying many of the burial finds. The Villanova culture here was related to opening Etruscan life ways and material goods, but there seems to have been a lot of variability in the cultural expressions. From the graves it is evident that there was advanced, local manufacture and also imported materials such as amber, bronze, ivory and precious metals (von Eles 2002).

Cremation graves were the norm, with the burnt bones, ashes and smaller parts of the grave goods placed in funerary urns or bronze vessels (von Eles 2002). From the burnt residues wagons can be identified together with horse-bits. Men's graves generally have a few weapons. However, graves of warrior status also include armour. Despite the limited single grave area the quantity of finds can be rather numerous and surprising.

Grave no 89/1972 in the Lippi Necropolis (von Eles 2002) was excavated in 1972, and given a date around 650 BC. On the bottom of the 3.9 m deep pit was a big wooden chest of the size c. 130 x 82 cm and c. 64 cm high, in which all furnishing were placed, except for a wooden footboard and an exceptional throne (Fig. 3). The remains of a dead man filled a situla, with a bronze shield as a cover and several pieces of textiles on top of it. One of them proved to be a semi-circular mantle. Traces of two wagons, two helmets of different characters (one Etruscan and one of Adriatic origin) were also found. A spearhead, a knife, an axe and a small shield completed the armour set. There were sets of bronze plates, vessels and wooden cups, with food offerings. And finally – all in wood – a fan, a painted box and a footstool with one long side somewhat curved. All wooden items were of high quality and covered with patterns. Higher up from the chest in the pit a wooden throne was found together with a footboard of c. 30 cm length. Both items were highly decorated and on the inside of the back of the throne was a very complicated figurative frieze. The images are of great interest to Scandinavian archaeologists as well, as some – or rather the main part of the figures – can be recognized as details, but not as whole compositions, from northern rock art (Janson et al. 1989). For example, one of the scenes from the left wagon picture (maybe repeated on the right side) is quite similar to a famous scene from the Kivik grave in Sweden on stone no 8. Some images, demonstrating textile work situations, are astonishing and clarifying. With the figurative frieze in mind, the throne could very well originally have been made for a high-ranking female. Other graves in the vicinity have produced three more thrones and also tables, and a deposit of bronze shields was found close to a well (von Eles 2002).



Fig. 2 A couch of riveted bronze plates from the chamber grave of Hochdorf, Germany placed together with drinking horns and a wagon, loaded with a service of bronze bowls. The couch was the deathbed of a man of high rank. The grave is dated to c. 600 BC. The Hochdorf Museum, Hochdorf.

The throne is made from a tree trunk in one piece and is of a model, which appears both in marble, wood, ivory or even riveted metal sheets and is known from finds such as small models, and images on situlae and wall paintings (Torelli 1988, 1997; Frey 2011). The throne model has many counterparts in folk furniture, a sort of basic construction, made both from a tree log and from plaited straw (Steensberg 1973). The item is called a throne as it seems to be part of prestigious, attending situations, but the same furniture type can be part of weaving scenes, wagon trips or built-in in Etruscan grave chambers (Torelli 1988). A sign of the importance of the throne as a symbol is observed in the many compositions in Etruscan graves, where an urn, often with some human features such as face, ears and arms and containing the cremation, was placed on the seat (Torelli 1988).

The throne has a seat c. 40 cm high to which could be added the foot-stool, which did not increase the height of the seat, but made the lap very horizontal, an ideal working position. The footboard was probably intended for the throne, when used on a wagon. Even if the throne was heavy to move and to lift up, the risen floor of the rolling vehicle made it possible to view its designed back, and also to offer good visibility.

However, placed on the ground the throne was probably stationary in its position, which meant that it was up to the audience to approach and move forward to be seen and heard. The visual field was very much directed forward.

Final remarks

Inspiration for some ahistorical reflexions on being in a space together with different kinds of furniture comes from the acclaimed writer Paul Auster, in his recent novel *Winter journal*, which has the author's bodily experiences as an initial position for rather self-absorbed contemplations (Auster 2012).

The three examples above have much in common, but they are all rare as archaeological discoveries, not least due to the preservation challenges inherent in wood. In each context, their contemporary material culture was often robbed, both shortly after the sealing of the graves and after long time. Well-preserved remains trigger us to contemplate the way of the world and the transformation of materials for human use. In this case the wet conditions of the

sites and the locked-out oxygen was of vital importance. Details should be appreciated as more than just details, as they become arguments for or against our opinions and they may even allow us to make observations diachronically.

As a reminder, the archaeological mission in itself is destructive and leaves behind very little of what was once there.

Comparison between related prehistoric items often opens up remarkable distances both in space and time. The folding stool is such a piece, but it is very likely it was not alone as a borrowed cultural thing. Another such item could be the war chariot. It may even be that the tree-trunk coffin of the Scandinavian Bronze Age is an attempt to imitate Pharaonic sarcophagi.

Modern research on furniture design and the human body tells us that there are no standard measures and that there are discrepancies in the individual shaping of seating furniture (Berglund 2001). A contemporary norm for Swedish adults is the requirement for a seat to have a height between 40-50 centimetres. However, the use of a table determines this recent measurement and a global and timeless size of chairs is not plausible. Even if the human body is more or less the same through time, the use of seating furniture and its relation to different kinds of work would be culturally determined.

Seating and getting up could be rather complicated, depending on the form of the chair. If there was no room under the seat, there was a need for elbow-rests or assistance from other people when rising from a seat. If a foot-stool was used one had to step down to the floor before rising. Whether one is tall or short affects seating comfort. The seat depth may have determined if the back could be used for support or not. Of course many obstacles could be compensated for by cushions or the like. Even the foot-stools may have helped here.

The folding stool of Guldhøj has no back and could be used from either side. It is probable that the stool was moved around, hence easily mobile, and may have been used for addressing an audience which was circular in character - maybe an outdoor, travelling symbol, firmly connected to the high rank of the person in the seat.

The oblong sofa of Hochdorf was more of a space hindrance, not



Fig. 3 A wooden 'throne' from a male grave in the village of Verucchio, Italy. The piece of furniture was placed on top of a large donation of boxed grave goods, including what were once two wagons, weapons, textiles etc. The grave is dated to c. 650 BC. Museo Civico Archeologico, Verucchio. (reproduced with permission of the Italian Ministry for Cultural Assets and Activities, Emilia Romagna Superintendence for the Archaeological Heritage Archive)

circular in dominance, but would have been used to address a front audience of which a few may have come forward to share the seat. The symbolic figures on the inside of the back would have been concealed by the sitters. The form of the sofa has had an influence on how the space of the room was organized. If the sofa was not used, it was probably put to one side along a wall. The sofa seems to be indoor furniture, and it followed the deceased into the grave, where the sofa became a place for lying down, for ever.

The throne from Verucchio is round and has a front side and a back, with a complicated frieze, which can only be seen from a short distance. The chair must have been a focal point in the room and as such had an influence on the closest space. The sitting person would have been very much seated, concealing the figurative design and resting the feet on the foot-stool. The chair is not constructed to be easily moved onto a wagon, safely standing on the floor of a rolling vehicle, but positions like that are found in other illustrative presentations. The seat seems to have followed a person of rank and lost its social power at the death of the owner.

However, the frieze hints that the owner may have been a female, which contradicts what has been postulated above!

There are special relations between furniture, occupier and spectator. In situations of absence, the seats served as substitutes

for the owner and could still interact with other seated or standing persons. A person could be picked up by wagon-carried seats and be returned home; the act of coming back and the welcome ceremony - as well as saying farewell - must have been important and emotional events in the daily life.

In all three of these graves sets of drinking items have a prominent place, where the heavy impact of alcohol may be explained by the status of the buried person. In bad and cold weather it is quite possible that the beverages were heated up and the furniture warmed by glowing charcoal. None of the furniture is especially well adapted to winter conditions. The seating possibilities and the atmosphere around them probably formed an important opportunity for socializing: entertainment, play, fighting displays, music, discussing news and appropriate strategies for daily life matters. Such observations may be integrated with each other and allow for a comprehensive notion of 'the social' and what that could mean for north-south relations on both sides of the Alps (Bartoloni et al. 1998; Sofaer 2007; Bonfante 1986, 2011). So much of this is possible to extract from the situla art, which is a one-sided version of what was going on (Pauli 1988/89; Frey 2011). Aside from the demonstrated kinds of furniture, the varying dresses of men and women stress certain situations, events and also geographies. Furniture may be dressed and dresses may be furnished, like harnesses and helmets. Materiality is bleeding through all human actions.

The three examples could be elaborated upon much more, but here the main ambition is to show that through material and spatial studies, furniture is a part of a creation of space for social accommodation. Behind such stage designs there are human expectations and political will. Some of that could be reachable through the approach suggested here.

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THE PLAYFUL ARCHAEOLOGIST: AN APPROACH TO GAMING REMAINS FROM BRONZE AGE MOHENJO-DARO

Elke Rogersdotter

Abstract: This paper stems from the issue of how the dimension of play can be identified, researched and discussed in archaeology. Based on a study of game-related artefacts from the site of Mohenjo-daro, the largest urban settlement of the Bronze Age Indus Valley, it briefly outlines an experimental, testing mode of working that is subsequently termed a playful attitude. Thus emphasizing a close relationship between purpose and method, the approach shows how the elusiveness of play can be maintained through multiple perspectives. It also demonstrates how the endeavour to elucidate the subject requests a continuous and conscious bypassing of rigid definitions and engrained lines of interpretation.

Keywords: Mohenjo-daro, Indus Valley, gaming remains, play theory, play spectra, Simmel, forms of sociation

During one of our discussions, Professor Kristiansen and I came to consider what a search would entail for a subject as peculiar and elusive as play and its impact on past societies. In short, the answer agreed upon was quite simply that a playful attitude when handling ancient, play- and game-related remains would be needed in order to ensure its success. This forms the topic for the following paper, which starts from the seemingly impossible question of how to approach the dimension of play from an archaeological perspective. The discussion is based on a study of selected game-related artefacts from Mohenjo-daro, the largest urban settlement of the Bronze Age Indus Valley.

Archaeological approaches to ancient game-related materials constitute a relatively small field of research (cf. Hillbom 2005; Topsfield 2006). One reason for this may be that game-interpreted artefacts, belonging to the field of amusement and playfulness, are not regarded as important objects from an informational point of view (cf. Schädler 2007). In other words, somewhat ironically, the subject to date has not been taken seriously enough! In archaeological excavation reports, game-related finds have recurrently been lumped together with children's toys, '.../with the implicit conclusion that they are all somehow "childish", or at least the domain of children' (Finkel 2007:1). Another reason may be connected to the doubts often raised as to how, in a time- and space-setting different from one's own, one should distinguish which objects may actually have been intended for game play. Perhaps as a result of this, approaches to ancient games have traditionally tended to be rather object-centred. In that way, the game-related find in question tends to be primarily treated somewhat clinically, as a culture-bearing artefact, stripped of its dynamic nature and very essence, the dimension of fun. How, then, is it possible to overcome the difficulties when handling these sorts of remains, and how can they be conceptualized in the name of play? Can play, irrational, capricious and elusive in character, indeed be made compatible with a scientific, archaeological approach? What, in fact, 'is' play?

Play spectra

In order to search for an answer to the last question, we may have a look at ideas developed within the field of play theory. In this

school of thought, a number of researchers think that it is better to avoid striving for one, single definition of play, since that would risk destroying its elusive character (e.g. Bateson 2002; Caillois 2001 [1958]; Huizinga 1955 [1938]). Fritz (2004) suggests an alternative approach in which play is paid attention to through different dimensions or spectra instead, such as what he terms the construction- and the frame-spectrum, respectively (*Konstrukt- and Rahmungsdimension*). In this way, particular aspects of play can be studied separately and independently from each other. According to Fritz, 'construction' refers to the structure of mind that the partakers create for themselves in order to be able to start playing by use of chosen materials, rules and agreements. Hence, it is not the play process in itself, but the necessary ground for this process to begin and be maintained that is in focus. 'Frame' concerns the framing of a world of play, a world within which actions receive significances that are different from what they would have had in the real world. Fritz compares it to a world that is continuously arising; a process of ongoing connection between the worlds of imagination and reality (Fritz 2004). The idea of approaching play out of different spectra gives us a hint as to how we may proceed with our study. Rather than striving for one, all-encompassing interpretation of the material and the role of play within the past social setting of our study, the subject may be encountered from different starting points. Through such an approach, play can be handled with the elasticity that, according to the play theoretical field, the term actually implies. Based on this reasoning, and translated into an archaeological language, the term 'construction' can be said to concern the question of what possible play processes can be distinguished, not only out of the material at hand, but also out of the perspectives we apply to it. The term 'frame' refers in turn to the possible place of these constructions within the social context in which they once appeared, which means that we here come to test our suggested constructions.

Mohenjo-daro: the site and its gaming remains

Mohenjo-daro is situated 450 kilometres north of Karachi in the province of Sindh in today's Pakistan. It forms the largest urban settlement of the Bronze Age Indus Valley, the urban phase of which flourished from about 2500 to 2000 BC. The settlement was once situated close to the west bank of the river Indus, which now



Fig. 1 Lane with mudbrick buildings, Mohenjo-daro. Photo: the author.

runs about two kilometres away. The site had an inhabited area greater than 250 hectares, and the population is estimated to have been over 35,000 inhabitants (Jansen 1986, 1993; Kenoyer 2000). The settlement consists of an ‘upper town’ and a ‘lower town’. The upper town is crowned by the remnants of a Buddhist stupa belonging to a more recent time, which was built on top of the Bronze Age remains. This part of the settlement has, for different reasons, been thought of as having served public functions. The mounds of the lower town spread out towards the east. They consist of hundreds of clustered remains of mudbrick buildings in densely built and separated neighbourhoods, intersected by broad, roughly parallel streets and narrow lanes (Jansen 1993; Saeed 1998) (Fig. 1). Significant parts of the social structure of Mohenjo-daro and other Indus Valley urban settlements remain elusive and are the subject of discussions and debate (see Rogersdotter 2011 for an overview). Monumental or religious buildings are mainly absent, while larger buildings do not commonly appear in clusters but are found spread out in different neighbourhoods. The presence of localized authorities and possibly several elite groups have been suggested (e.g. Kenoyer 2000; Wright 2010). Since 1979, Mohenjo-daro has been included in UNESCO’s list of world heritage sites (Jansen 1993).

Large-scale excavations of the site were undertaken in the 1920s and the 1930s. Among the numerous finds that came to light were a number of artefacts of a supposedly game-related character. Descriptions of these kinds of artefacts can be found in the published excavation reports in the chapters named *Games and Toys* (Mackay 1931a, 1938a). These texts show that game-related artefacts have been found all over the site and, generally, in large numbers. The chapters mention on the one hand easily recognizable play- and game-related objects, such as different forms of dice (cubical and long; the latter type may be unknown to

Western readers, but is frequently used in South Asia today [Soar 2007: note 3]). On the other hand, they present more ‘neutral’ items or finds that may not fit as obviously into a game-related classification, finds that nevertheless were interpreted by Mackay as probably having a game-related purpose. For example, various kinds of gamesmen-like objects, as well as a group of finds labelled by Mackay as casting sticks.

I will illustrate my approach with a closer look at two types of objects: the long type of dice (which may represent the more easily recognizable group of game-related items) and the casting sticks (which may stand for a more unknown group of finds; one, in which a gaming purpose may not be as easily identified) (Fig. 2). In both of the chapters by Mackay, individual objects are described in detail as to material, measurements, appearance and location. The descriptions seem to have the purpose of finding out the most plausible classification of the type in question. As they represent the above-mentioned, classical way of presenting game-related material, I will use them in the first starting point, exemplifying the object-centred perspective.

The object-centred point of view

The long type of dice and the casting sticks have a number of properties in common. They are mostly made of ivory, with a few examples in bone. They are of a rod-like shape and can be divided into different sub-groups, most of them either square or triangular in section with square-cut ends. In addition, some casting sticks are rectangular or half round in section. Some specimens of casting sticks that are square or rectangular in section display a slightly tapering shape. Both long dice and casting sticks occur in a variety of lengths, ranging between about 3-11 centimetres. They have been ornamented with incised, differently formed patterns,



Fig. 2 Example of a casting stick of triangular section. After Marshall 1931:PL. CXXXII.22.

the greatest variety of which is exhibited by the casting sticks. Both types recurrently display circular incisions consisting of simple, double or triple circles, as well as lines forming curves or going in a parallel, longitudinal direction. Different kinds of cross patterns are common as well. In a few cases, the ends exhibit circular incisions. According to Mackay, the incisions were probably once filled in with either black or both black and red pigment. In general, both the dice and the casting sticks appear polished by much wear (Mackay 1931a:556f, 1938a:560ff). The main divergence between the two types of objects is that the dice display differently ornamented sides, which have been interpreted as representing different numbers (some specimens that are square in section seem for example to display the numbers one, two and three on three of their sides, marked out with circular incisions), while the casting sticks bear the same patterns of ornamentation on all their sides. As Mackay states, because of this feature, these objects cannot have been used as dice. They are suggested by him to have belonged to some game of chance, perhaps with the purpose of being dropped or thrown, and then observing their ways of falling. Their frequent appearance is at the same time stated as something of an enigma (Mackay 1931a:556 and footnote 1, 1931b:563, 1938a:561, 1938b:420). Thus, and despite the fact that the two types of objects resemble each other, we arrive at two distinct categories of game-related items, situated widely apart not only in terms of signalling different games, but also in terms of degree of certainty as to purpose. Based on this account, at least two different play processes may be seen in the materials; the first one consisting of the throwing of the dice, the second one made up from the dropping or casting of sticks. The one thing in common is that both processes can be said to concern games of chance or luck.

However, when trying to distinguish ‘worlds of play’ on the basis of these play processes or play constructions, that is, when considering the social context of the latter, certain difficulties appear, since the throwing of the dice and the dropping of the sticks appear as rather isolated phenomena. As such, the two constructions can be called into question in different ways: if the objects have only been used to be thrown/dropped in play, then why are they so elaborate and varied in appearance? A plausible presumption is that they may have been regarded and handled as valuable possessions. But, if that were the case, would the items then really have been used as game-related utensils? If not, then why are they so worn? Another issue concerns what the two play constructions would actually involve; is it only about throwing/dropping the items? Would that not make them rather boring games? Furthermore, there is the question of why the two types of finds resemble each other to such a degree, a question that is not adhered to by our interpretation, as well as the problem that we cannot know for certain whether the casting sticks were indeed used in the way we have suggested. Our object-centred focus lacks both a comparative perspective and a contextual anchorage, while our definitions both appear too abstract and, at the same time, too definite. Coming this far, the search session is better interrupted. In order to abandon the all too abstract/definite elements in our

way of thinking, we must change gears and, preferably, try a more contextually-based approach instead.

The context-centred point of view

Rather than only noting that most examples of the dice and the casting sticks are made of ivory, we may think of the character of this material in comparison with other materials. For example, ivory is noticeably hard, which could be taken to imply that the objects should sustain rather hard handling. This assumption in combination with the circumstance that the objects display a marked degree of wear inspires the question how they have been used in more concrete ways. Fritz (2004) suggests that a distinction of different play forms can be determined on the basis of which areas of orientation – symbols, rules, bodily movements and thought processes – they are directing themselves towards. The first area concerns such things as playing with dolls; the second applies to card games and the like; the third concerns functional playing aimed at bodily control; and the fourth refers to such things as mathematical puzzles. Although all areas have to be included in order for a functioning construction of play to take shape, different constructions position themselves differently depending on which area or areas they are being drawn to (Fritz 2004:49ff). With this division, we can focus on the fields of movement of the play constructions, or, in other words, the concrete management of the objects. The earlier suggestion that the dice and sticks have been thrown/dropped would thus lead to the area of ‘bodily movements’. This leads us away from the more abstract thought simply classifying the items as the remains of games of chance. Rather, they appear to have been the traces of more advanced gaming, in which aspects such as bodily control play a significant role.

Next, instead of dividing the objects into sub-groups, the noticeable variation displayed by them when taken together can be stressed. In the light of a more advanced game, it may be asked whether this abundance of variation may have had significance for the gaming itself. In this connection, spatial distribution may be relevant to consider, an aspect which was not of interest in the previous, object-focused reasoning. In an earlier work (Rogersdotter 2011), I have studied the spatial distribution for nearly 300 game-related finds within one of the smaller neighbourhoods of Mohenjo-daro, the DK-C area, which is about 7,800 square metres in size and situated in the eastern part of the lower town. The study was based on the find register from the first season of excavation in this area (1924-25). The results indicated on one hand that game-related artefacts were found in most parts of the neighbourhood, on the other that the finds were not evenly distributed but mainly appeared in clearly discernible concentrations in distinct localities, each composed of specific types and numbers of game objects. Regarding the particular finds under discussion, casting sticks appear in greater numbers than long dice, at the same time as the two types of items are mostly found in the same concentrations. Combining this last fact with the close points of similarity in material and form of the two types of objects, this could indicate that they may have belonged together in some way. Considering the greater number of casting sticks, as well as their variation in form and pattern, we may contemplate whether the casting sticks formed part of the playing of dice, perhaps as some kind of counters, a not too uncommon feature in the world of gaming (cf. Culin 1895; Grunfeld et al. 1978; Lönnqvist 1992). This would widen the field of utilization of the casting sticks, as well as tie them closer to the dice. If used in that way, a rather complex field of gaming occurs in which systems of points of value may have played a significant part.

Thus, via a more contextually based, comparative approach, a more vivid, multifarious image of possible processes of play on the basis of the material at hand emerges. We have abandoned the abstract terminology by asking for the concrete management of the objects, at the same time as we have avoided all too definite, and thereby problematic, definitions by viewing the items as parts of a larger, connected group. A gaming context is thus attained, which in turn can be tested against a possible, social reality. Having a more advanced form of gaming in mind, the question arises as to the social role and meaning of this. Connections between game play and social status have been noted by various researchers in the field of traditional games and gaming (cf. Eliade & Adams 1987:470ff). Bourdieu (1990), on the other hand, uses the phrase ‘feel for the game’ in connection with the emphasis of the significance of everyday practices for the play about social positions. With the term, he points to the encounter between what in simplified words may be described as the inner self and its outer surroundings. The term provides the ‘game’ with a subjective and an objective sense, as well as lends a feeling for the probable outcome of the game (Bourdieu 1990:66). In this connection, it is tempting to interpret the term literally. The game does not occur by chance, without a plan or as an isolated phenomenon, something which probably would have brought about a different, more incoherent pattern of variation or of spatial distribution. The gaming is permeated by a ‘sense of outcome’ that binds the partakers together and turns the gaming into a social ritual that may have contributed to the creation and maintenance of such things as social positions. Against this background, the uneven spatial distribution can be interpreted in terms of openness/closeness; different groups of people may have had different access to the game. The elaborately formed objects, which were previously thought of in terms of valuable possessions, may now rather be taken to signal the deep reaching, social significance of the gaming: it cannot be acted out with just anything on hand. Through a more context-centred focus, the objects can accordingly be established as rational traces of social realities.

However, at the same time, this has the effect that the playful dimension of the gaming is lost; emphasizing a ‘sense of outcome’, we reach a game permeated by seriousness and dictated by the conditions of the surrounding reality. Thus, while endeavouring to contextualize the gaming, we seem at the same time to lose sight of the mood of play. Furthermore, while trying to escape overly rigid definitions by focusing on the objects as a larger group, we have nevertheless not branched out from the issue of how individuals have handled them. As a result, although changing our starting point, we have still kept to the individual or, in other words, to the all too definite. Once again we must halt in order to formulate yet another point of departure; one in which the individual can be avoided, while the gaming can be highlighted as an operational world of play.

The form-centred point of view

According to the play theory developed by Csikszentmihalyi and Bennett (1971), in order to attain what they term ‘play experience’, it is of importance to separate the game from the routines of everyday life by marking out its place and providing it with a specific atmosphere. This can for example be achieved through specific architecture, or through the use of specifically designed objects (Csikszentmihalyi & Bennett 1971:46ff). When the finds are analysed from this angle, we may note several distinguishing features. As Mackay (1931b:562) observed, ivory was rarely used in Mohenjo-daro. Consequently, the primary material of the objects appears not only durable, but also rather exceptional.

Considering the forms and patterns of the dice and the casting sticks, the objects may additionally, in contrast to the above stated focus on variation, seem markedly repetitive in appearance, which further accentuates a distinctive character. The power and energy invested in the ornamentation may be an expression for the need to separate these items and, thus, make the gaming possible. As concerns the spatial distribution of the items, their clustered appearance may imply that the gaming occurred in separate, perhaps especially marked, locations. The circumstance that the objects seem to be well used may in turn hint at the fact that the separation worked out, that is, that the gaming was popular.

To grasp this in a more analytical way, the gaming can be approached as a specific space created from diverse, yet interplaying ‘powers of attraction’. Following Fritz (2004), in order to survive, a game must have the capability of attracting participants through various kinds of such powers. These may range from risk-taking to entertaining, and most games usually consist of combinations of a number of powers. In this way, one and the same game may imply different motivations and meanings for different individuals (Fritz 2004:44ff). Conversely, the advantage of this perspective is that it can invite several partakers, from active participants to spectators. It can be illustrated with some examples of ways of playing guessing games, a category of games popular to many societies around the world (Pusch 2007), which frequently tend to attract a number of partakers with different kinds and degrees of participation. Broadly speaking, this concerns the hiding and the subsequent detection of a specific object and appears in many variants. A common example from a European context is sometimes referred to as the *game of the gold ring* (e.g. Aeberli 2007). It requires a number of participants and consists basically of passing a small finger ring from one closed hand to the next while everyone is singing. One player tries to follow the passing and, when the song ends, guesses in which hand the ring is hidden. It is a fairly simple game well-known to children. The Dogon in Mali play variants of a more complex guessing game known as *Sey*. One of the players may for example let a stone secretly slip between the fingers and into one of several small holes dug in the sand, while at the same time covering the holes with sand again. In finding out in which hole the stone has landed, the opponent needs sharp observation skills and, in most cases, may use the assistance of engaged spectators (e.g. Grunfeld et al. 1978). In a group of guessing games that were traditionally played by North American tribes, sticks were used that were made of wood or cane and ornamented with patterns in different variations. A bundle of sticks was divided and partly concealed in the hands of one of the players. The opponent had to guess in which hand one particular, oddly marked stick was hidden, or in which hand an odd number of sticks were held. Intricate systems of points were used, and the game demanded a ‘quick eye’ and the ability to count fast. The game tended to gather large numbers of spectators, sometimes the whole village, in some instances accompanying it with singing and drumming (Culin 1993 [1907]).

Although the way the North American sticks were patterned bears some noteworthy similarities to the objects from Mohenjo-daro, it is naturally far-fetched to state that the latter therefore specifically represents the playing of guessing games. What the examples show, however, in particular the vivid North American gaming scenario, is that rather than focusing on an exact definition of the items, which is problematic anyhow, or on the concrete handling of the objects, we can approach them as parts of a wider, game-related context. With Simmel’s (e.g. 1992 [1908]) terminology, borrowed from his theories on sociology, we approach and

encircle a specific and distinct form created through people's coming together in play. According to Simmel, the study of social phenomena should primarily and ideally consist of the study of 'forms of sociation', that is, simply explained, the various forms that come into being when individuals reciprocally interact in and with particular situations, since these forms, regardless of their size or their seeming insignificance, constitute the foundation for society. It is through these that society becomes society, and through these that society receives its elasticity (Simmel 1992 [1908]:23f, 32ff). A focus on forms allows us first of all to avoid having to work with rigid definitions. With the form, which in itself, and in this particular case, had the capability to entertain as well as to maintain excitement, the game play can secondly be further conceptualized as an independently working world or unit. That is, a world coming into existence through game-related interactions, which co-exists with, but is not subordinated to, reality. Accordingly, with this reasoning, we are not forced to explain the presence of play and gaming in terms of social rituals or other functional/contextualizing models. We arrive at an approach in which the play in itself, as elusive as it may be, is placed in the centre and, thereby, can be discussed as one of several forms that created and maintained the past social setting of our focus.

Conclusion: play as method

Searching for play on the basis of possible, game-related artefacts and out of an archaeological perspective is a complex undertaking that challenges our established ways of thinking and approaching things. This paper has only presented a swift outline of thoughts that originally form part of a more elaborated, theoretical discussion on the subject (Rogersdotter 2011). It has intended to show how, through the adoption of a way of working divided into different play spectra and starting points, a single, sovereign line of interpretation, which in this context would have been problematic, can be avoided. Built up from analytical, divisible parts, the search has in contrast, through a continuous process of testing, indicated the opportunity to consciously apply and scrutinize multiple paths in regard to the handling of archaeological material. A two-dimensional flexibility or, while evaluated through the play spectra, a playful attitude has thus been maintained, by which a too firm ordering of the finds has been evaded to both escape the problems inherent in distinguishing ancient gaming remains and to attain the difficult-to-catch character of play. Play has thus not only constituted the purpose of the study, but also the way towards it, emphasizing a close relationship as a key to successfully bypassing rigid definitions and engrained lines of interpretation.

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A SWORD FOR THE CHIEF – A CONVERSATION WITH KRISTIAN

Marie Louise Stig Sørensen

Abstract: This paper aims to do two things. It wants to consider the 'presence' of chiefs in the Danish Bronze Age and the role of swords and indeed whether we can contemplate the quality of swordness. It does the former by looking at how the idea of chiefs has taken form since the beginning of the discipline, and what the expected character of this person/position has become. The latter is based on reflection on the diversity of objects arguing that we still do not comprehend them sufficiently and suggesting we need to pay more attention to their production as a genuine complement to consumption studies. It also suggests that objects have at least two biographies. One is about the object as a thing whereas the other (its ancestry) is the object as the realization of an idea of a particular kind of object.

Keywords: Bronzer Age, objects, swords, chiefs, biography

Archaeology and things, some preliminary reflections

Archaeology has recently, as one says, taken a material turn. The object - its agency and materiality, and its thingness - has taken central place (again), and the discipline is engaging with the very qualities that make us disciplinarily distinct: material objects. This is a central challenge, but not a new one. Essentially such arguments about the nature of objects continue a long-standing analytical concern with people and objects; but they bring into sharper focus the interplay between them, and they grant objects new kinds of agencies. The dynamics between people, as an interior subject/subjectivity, and their exterior acts and expressions, and the subsequent separate existence of those expressions, are the core concern of this materialist archaeology. The fundamental concern is therefore familiar to archaeologists. Renfrew (1998) referred to the relationship in terms of external storage, whereas Gell (1998) talked about the agency of material culture and engaged with qualities of meanings that could be captured in phrases such as distributed objects. Others, such as DeMarrais (2004), have focused on materialization and thus in effect developed new perspectives on the classic question about the relationship between material culture and ideology. More recently Olsen (2010) has written 'in defense of things' arguing for the importance of engaging exploratively, but also attentively, with things' being.

Research on the Bronze Age has always demanded great attention to objects; they need to be thought through and with, and it is really only through its objects that the period becomes culturally distinct. One can even argue that a new object epistemology was formed during the Bronze Age (Flohr Sørensen¹, pers. comm.) and is seen in the development of entirely new categories of objects and in new and distinct ways of materializing the body through such objects (e.g. Sørensen 2010). Bronze Age research is therefore well suited to 'object-people', and there have been, and are, many Bronze Age scholars who may be thus described. Amongst the many papers and discussions produced by such researchers one of my personal favourites (and ones that I have often discussed with Kristian) is the debate between Sophus Müller and Oscar Montelius, two of our foremost Bronze Age chiefs, and their respective attempts at diminishing the validity of the other's arguments and proving their own points. As they were battling out arguments about how we understand - not what we understand but how we reach understanding of prehistoric objects

– they revealed some of the core challenges we all encounter when thinking about and with objects, and they used the Bronze Age objects to argue their points. Basically, theirs was a discussion between, on one hand, an artistic imaginative engagement and, on the other hand, a formalistic and logical one (for a review of their arguments see Sørensen 1997). What makes their discussions interesting, however, is that both had an extraordinary, broadly based and detailed knowledge of the bronzes from Europe; both also seem to have been exceptionally sensitive, almost sensuous, in their appreciation of these objects. The challenge which they raised and engaged with, but did not finish, is the question of how we understand such objects, how can we comprehend their qualities, their similarities and differences, internal relations and dynamic and, in particular, how do their particularities relate to what they do and how they do it?

Kristian is also an object person, and this brief paper, which in its intentions is more like a causerie than a formal argument, is a contribution to our ongoing conversation about the Bronze Age. Questions about the nature and affect of bronze objects, about how we can understand them, what they meant and the affect they had when used, have existed as a kind of murmur behind all our conversations. They constitute a continuously ongoing, never finished but repeatedly-returned-to conversation. The conversation started many, many years ago when I, then an undergraduate student at Moesgård, had missed my bus and got a lift from a young scholar. At the passenger seat was a thick manuscript.² It was pushed aside to give me room, but I manage to read the beginning of a title, and then knew that my driver was a Bronze Age specialist. That is where our conversation began

As a contribution to that conversation I shall briefly ponder the idea of chiefs, how we make them, and thereafter think about swords, what they are and what they do.

On chiefs in the Danish Bronze Age

There have been chiefs in the Danish Bronze Age for a long time – maybe not from the very beginning, but one can follow them through the development of the discipline and our engagement

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² This was Kristian's manuscript for his gold medal dissertation submitted to Århus university in 1974, the title was "En kildekritisk- og kronologisk analyse, samt en tolkning af den yngre bronzælders depotfund (periode IV-V)" [A source critical and chronological analysis and an interpretation of the Late Bronze Age hoards (period IV-V) (Kristiansen 1974a).

with the past. First, we had C. J. Thomsen, who may be considered our first chief, although he appears slightly overshadowed by the assumptions and intentions we now all assign to him in our desire to create disciplinary origin (Sørensen 1999). It is not entirely clear how he understood the past that he had participated in creating. Chiefs (or other social positions) were not mentioned in his work, and it is difficult to feel sure whether they were present in the past he imagined. After him came J. J. A. Worsaae; he most definitely was a chief, and he saw the Bronze Age through such roles and positions. He referred to the Bronze Age people in an almost ancestral tone calling them ‘the old Bronze Age People’ [*det gamle bronzealder folk*] (Worsaae 1846:68), providing a profound impression of a people in the sense of *Volk* with its strong association to land and customs. With Sophus Müller, for me one of our biggest Bronze Age chiefs, the differences amongst Bronze Age people gained clearer form. I do not think he used the term chief [*høvding*] in his writing, but he did make a clear link between weapons and warriors (Müller 1897:229), and he made explicit comparisons with the Homeric hero and warrior, a theme that has continued to echo in Danish Bronze Age literature (e.g. Kristiansen 1983, 2001; Kristiansen & Larsson 2005; for discussion of these concepts see Vandkilde 2006a and 2006b).

It is first and foremost the warrior we have learned to know in the finds from the Bronze Age – standing on his chariot he drew into the battle like a Homeric hero [Det er først og fremmest krigeren, vi havde lært at kjende i bronzealderens fund --- staaende paa sin vogn kjorte han i kampen som en homerisk helt] (Müller 1897:398).

He also assumed that kinship relations and family were central axes of social relations and distinctions, and wrote about tribes and groups in a manner that was to become a recurrent theme in Danish Bronze Age studies. Interestingly, he paid considerable attention to gender differences and he suggested that some women had significant positions, whereas other groups in society must, he argued, have lived as a slave-like caste (Müller 401).

Women had an esteemed position in the Bronze Age ... it can be inferred that during the Bronze Age one was far removed from the condition which is commonly found amongst lower standing people that the women are the property and beast of burden of the man, and that her welfare was entirely depending on his moods. [Kvinden indtog en anseet Stilling i Bronzealderen; ...kan det sluttes, at man i Bronzeralderen var vidt fjærnet fra det Forhold, som almindelig forekommer hos lavstaaende Folk, at Kvinden er Mandens Eiendom og Trældyr; hvis Vel og Ve alene afhænger af hans Luner] (Müller 1897:400-01).

.... in this way the picture, which on the basis of Nordic finds has to be reached about Bronze Age men and women, is only understandable under the assumption that behind them lived another, lower and working population. [...saaledes lader det Billede, som efter de nordiske Fund maa dannes af bronzealderens Mænd og Kvinder; sig kun forstaa under Antagelse af, at der bag dem har levet en anden, lavere og arbejdende Befolkning] (Müller 1897:401).

By the mid twentieth century a clear concept of Bronze Age society had been established³, and as part and parcel of this development we had also gained an unequivocal notion of community leaders.

The Bronze Age chief had become cemented into discussions of the period, and he (and I use this word deliberately, as this gender was assumed in all texts) took on the forms and qualities of what Jørgen Jensen (1998) later identified as one of the Danish social stereotypes, or in other words an interpretative trope. Scrutinising the characteristics of these chiefs reveals, however, interesting ambiguities. The Bronze Age chief was presented as powerful yet part of the people and embedded within the domestic rural landscape - he at the most was associated with hamlets or village-like communities. He was partner to long distance trade, yet local in his preferences and choices. He was also made to appear as the quintessentially chief: an upright and successful leader of his people. He was full of initiative, vigour and action and had close connections to metalworking, and maybe he was also the initiator of ceremonial and ritual practices. His association with agricultural work or other productive activities, at the same time, was vague and unspecific. It was not, I think, entirely clear what the Bronze Age chief did, but it had become very apparent what kind of man he was. These chiefs were the Danish Bronze Age aristocracy, and they were often labelled so.

Jørgen Jensen has identified these qualities as emerging from a strong mythical and poetic understanding of the nation's history, nature and society – a poetic historicism also found in Danish literature of the first half of the twentieth century, for example the author Johannes V. Jensen's (1873-1950) influential historical novels. There was strong cross fertilization between archaeology and literature in terms of narratives and interpretative tropes, and this in many ways engendered an empathetic involvement with prehistory. Although this Bronze Age chief was an impressionistic construction he had by the mid twentieth century become very real both in archaeological expectation and interpretations and in our collective imagination.

Over recent decades reactions to the taken-for-granted assumption about chiefs have emerged. ‘Too many chiefs and not enough Indians’ (Broadbent 1983) became a catch-phrase in the late 1980s, and questions like ‘How Chiefs Come to Power’ (Earle 1997) were asked. There is now a widespread scepticism regarding the appropriateness of the concept for the European Bronze Age (e.g. Brück & Fontijn in Press; Johansen et al. 2004; Sørensen in Press), but the term (and its implications) has not been successfully replaced with a more helpful designation. One response to the critique has been to attempt to find the signatures of chiefs within the archaeological record. In Denmark, the excavation of the Lusehøj barrow at Voldtofte, an outstanding and richly furnished Late Bronze Age mortuary construction that represents a huge investment of labour (Thrane 1984) was, for example, in many ways used to prove the existence of chiefs. The Thy project (1990-97), with Kristian as one of the project leaders together with J-H. Bech and T. Earle, is another example. It explicitly aimed to investigate social complexity through Bronze Age organization of the landscape. Other landscape studies critically assessing the degree of centralized organization of the landscape, and thus the power and influence of chiefs, have also been conducted (e.g. Johansen et al. 2004). Despite such projects, and their genuine concern with a better contextualization of chiefs, it is still the bronze objects that provide the most elaborate and detailed arguments about Bronze Age chiefs, and in this area Kristian has excelled.

Kristian's chiefs

Kristian's first contribution to conversations about bronze objects was his paper on the Glerup hoard (Kristiansen 1974b).

³ The increase in the use of the Danish word ‘samfund’ with its implication of togetherness is more telling than the English ‘society’.

An important paper, I think, and one that has been less explored than it deserves. It made the point that the objects from the hoard should be understood as constituting 'sets'. Although connections between objects had been observed for a long time, Kristian approached the find in a manner that moved beyond objects as single things to a concern with their relationships, their links with other objects – what we may now refer to as their distributive character (Gell 1998). After Glerup, Kristian's artifact analyses have in particular focused on swords and how they make warriors. His arguments about chiefs and swords differ from those made before him in exploring the character of swords rather than merely taking it for granted. Using ideas about the symbolic and functional meanings of objects, his aim was to show how swords functioned socially and were valued within Bronze Age society.

For Kristian swords visualize differences between men. He acknowledges that they may also be the makers of such differences, as they are not just symbolic markers, but are also the means of certain actions and recognitions. A sword is therefore not just another object, it is an object that is linked to, indeed it carries the essence of, a certain kind of social activity: having a sword becomes a means of being a warrior. Kristian also used major typological differences between swords to argue that they were socially different kinds of swords, i.e. that they had different functional/symbolic associations and were used by different groups in society, warriors and chiefs respectively (e.g. Kristiansen 1983, 2001). Through such arguments Kristian rejected the singular taken-for-granted understanding of swords opening up for explorations of the complex linkages that may reside within these objects in terms of how social positions, special activities, ideas and material form interconnect. In the following brief musing on swords as things I try to speculate further and ask whether there is more to swords than their functions and their possession.

On swords and thingness

What is a sword? Can it be explained apart from its apparent function – and what was that function? The sword developed during the Early Bronze Age, and although weapons existed before we must assume that the specific idea of this weapon, and the particular cultural understandings of fighting that are embedded within its form, did not exist until the sword came into being. With the sword we see something new that was neither functionally similar to other weapons nor morphologically merely an extension of, or development from, previous forms.

To more fully appreciate what a Bronze Age sword is, I therefore suggest we need to explore the apparently banal observation that objects are different. Current theoretical debates only partly help with this as in some ways they exaggerate the distinct characteristics of objects and at the same time ignore their diversity. The unique and the banal are talked about in the same breath: art, craft, mass products and informal one-offs are all just things. The flattening-out effect also informs the way in which we tend to assign agency to things and assume affect in manners that treat all objects the same. This lack of clarity suggests we have not really begun to engage with objects. Neither arguments about object agency nor about their affect will be of interest if we automatically grant it to all things in equal measures. We can ask, for example, whether such dimensions of things are connected to certain preconditions, for example, and in which ways they are influenced by (or dependent on) the objects themselves and the activities they are part of and through which they are animated?

Another important point is that not all objects have the same qualities, and that objects' meanings are non-static but open for interpretation, manipulation and subversion. Social convention is a significant aspect of this, and the interaction between social norms and object meanings is extremely intriguing, revealing an intimate link between social understanding and things; but the quality goes beyond that. We therefore need to ponder why some objects seem more different and distinct than others. How do we argue this, and how do we progress from empirical observation to actually documenting this? Such distinctions are not merely a matter of the rarity of an object or even the quality of its execution. The Bronze Age sword, for example, seems special, a distinct object within the Bronze Age *koine*. When we study assemblages, gaze at hundreds of swords (as Kristian has done), and notice, formally as well as subconsciously, a range of details which set the sword apart from other kinds of objects, the difference seems 'obvious'. But what are these details and how do they relate to understandings, intentions and practices within Bronze Age communities? Initially, one may be tempted to think this is about the difference between the unique and the routine, between the mass produced and the one-off; but it seems that the differentiation that exists amongst objects is more complex than this.

On swords and swordness

The following are, therefore, a few tentative thoughts about critical engagement with bronze swords. My reflections are grounded in the need to deal with difference and distinction, and a concern with what makes objects meaningful and understandable within their diversity. Or in other words: 'what makes a sword a sword' and what is the quality of 'swordness'? There are, I suggest, several components of this quality, and these may be explored in terms of how the making and using of a sword were grounded within a particular way of thinking about, making and using these objects.

I suggest that one of these aspects is the object's history; but this is history as a potentially complex and multi-dimensional aspect of the object. This is different from the idea of biography that we have become used to, but which is not adequate for understanding what objects are. I suggest that one response is to realize that there are at least two biographies at play. One is the individual biography through which, for example, a sword is implicated with a person, but the other is the biography of the idea of this particular kind of object, for example a sword, and thus its ancestry and history as a special type of thing – rather than the specific object. This means we need to recognize how the single sword has embedded within it a history and an aligned understanding of the kind of thing it is, and that this refers to other objects as much, if not more, than the object's individual production and use. If we return to Kristian's discussion of the ornaments in the Glerup hoard, then we can see how the concept of sets leads us to what, lacking a better term, one may call the conceptual dimension of the object. By this I mean how an object is conceptualized and thus in principle how it is understood as form independently of how it is used. The point is that the ornaments from the Glerup hoard (hanging vessels and buckle) are constituted as a set not just through practice of use but also in the practice of making them. To be a set was the intention of the objects, part of their conceptualization and formulation, irrespective of whether that intention was played out. Stressing this quality as essential to the object's meaning and form does not mean that we return to approaches that move social relations from our focus and which see objects as mere abstractions. It does, however, stress that the social is fluid and elastic rather than a simple relational quality, it can go in and out of focus, and it is embedded within different

dimensions of the objects including its conceptualization and its citations of other objects. It also suggests that production has been under-explored as a constitutive aspect of the meaning of objects at a level beyond what is captured in notions of typology. Paying more attention to production, moreover, does not, of course, mean that the importance of consumption is negated; the two are often deeply interconnected although not reducible to each other. In fact, embracing more explicitly the recognition that intentions and object-referencing are laid down within the object during its planning and production also means that the meaning accrued during its consumption can be understood as being played out along or against the meaning objects are 'born' with.

This means we need to explore an object's ancestry, i.e. how the individual sword has not just a biography, but also an ancestry as the idea of sword/ness is part of its production and part of the development of its specific form, a form through which certain desires, needs and functions had germinated. That continuous presence of a developing idea of what kind of object it is affects all swords. This is not so much about the intermingling of human and objects but about relationship amongst objects, about how in the one sword there is the story and understanding of earlier and other swords. One of the differences between objects may therefore possibly be found in this ancestry, and may be expressed through how explicit and referential of its ancestry the production of any object is. Essentially, I argue that the idea of the sword is performed in its making not just in its use. The production of an object is in this sense embellished with understandings and intentions about the object that is to be made. Analytically, we should therefore ask what are the production characteristics of swords, how loyal were they to the idea of swords (or an idea of a particular kind of sword) and what elements were explored, exaggerated, improved or ignored in the production of any one sword?

Through such cultural connectedness swords are not merely possessions, they also have fundamental influences on how the person with the sword may have been perceived and expressed his/her role and standing. The sword, in itself and due to its ancestry, participates in making the chief, just as the chief animates the sword: the person and the object mutually constitute each other.

Kristian has over several decades been in conversation with swords, and he has introduced new ways of not merely thinking about but also looking at swords. A part of his agenda has been to find the chiefs, and he has argued for the importance of both different chiefs and special objects. But, using Kristian as the example, it is clear that there is more to chiefs than this, they also extend hospitality and generosity.

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TECHNOLOGY AND CRAFTSMANSHIP

MISSSED INNOVATION: THE EARLIEST COPPER DAGGERS IN NORTHERN CENTRAL EUROPE AND SOUTHERN SCANDINAVIA

Johannes Müller

Abstract: The introduction of copper metallurgy in Europe was a long and continuous process in which innovations were used for the social display of individual power. The differences in social practices of Neolithic societies are apparent through the different ways new products were used. In the case of copper daggers, which date to around c. 3600-3300 cal BC, there is an obvious divergence in their development between northern and southern Central Europe. In the south, individual power structures allowed for the integration of new status items, and early copper daggers are imitated in flint, whereas in the north these objects were 'lost in history' since the prevailing collective ideology did not embrace individual power structures. The daggers from Aspenstedt (Harz area) and Bygholm (Jutland) represent such object biographies.

Keywords: Aspenstedt, copper daggers, innovation, Neolithic and Chalcolithic societies, Funnel Beaker societies

Processes of change in non-literate societies can usually be anticipated if at least a small group of agents within a community is willing to develop or to adapt new technologies, new production forces, new symbols of action, or to simply accommodate new ways of behaviour. In addition to changes in the economy, changes in social institutions of Neolithic societies are of particular interest here. Early developments of social stratification are linked in many areas of Europe to materializations of new social roles (Earle & Kristiansen 2010: 13, fig. 1.3), for example the display of individual wealth through golden ornaments in the Varna cemetery or the demonstration of labour mobilization in connection with the erection of megaliths of Northern and Western Europe.

Economy

During the Northern Neolithic one such example is the introduction of copper objects and copper metallurgy into local societies. This occurred contemporaneously with other new developments within the societies, especially in the subsistence economy. The change from foraging to agricultural production and the mosaic in between these modes of production were linked to a change in the spatial organization of the landscape, expressed for example by the laminated pollen profile from Lake Belau in Holstein (Wiethold 1998; Kirleis et al. 2011) (Fig. 1).

While in an early stage between 4100-3700 cal BC there are no clear changes in the tree pollen pattern and a significant rise in non-tree pollen is not discernible, a steep rise in ash and charcoal probably indicate some kind of 'Brandfeldbau' with small arable patches of land. Around 3600/3500 cal BC a steep decrease of tree pollen confirms the main opening of the landscape in the southern part of the Cimbric peninsula. Furthermore, after 3800 cal BC a continuous percentage of *Planatgo Lanceolatoata* marks the beginning of intensive livestock feeding in the forests – the 'Hude' forest appeared. The opening up of the landscape should be connected to the introduction of the crooked plough, marks of which have been found under and near megalithic tombs and houses from the Early Neolithic (EN) II, e.g. the plough marks of Apstrup (Amt Viborg) date to 3600-3300 cal BC and those of the Fuchsberg-house of Rastorf should also be mentioned (Hübner

2005; Steffens 2009). The technological improvement of the plough strengthened the role of cereals as a nutritional foundation, a fact underlined by the frequent occurrence of cereal samples on sites dating to the EN II and the MN (Middle Neolithic) phases. This phase of changes in the subsistence economy was also linked to a rise in population and a new organization of the societies, and changes in the demarcation of social space within the landscape are also visible. Around 3500 cal BC at the latest, for at least 200-300 years, megaliths, causewayed enclosures, and offerings in wet areas go hand in hand with the opening up of the environment (Müller 2011).

Within these centuries, around the middle of the fourth millennium cal BC, Northern Central European and Southern Scandinavian societies opened themselves to new influences from different directions. The two single copper daggers from Bygholm and Aspenstedt from this time period (labelled Early Neolithic II (Fuchsberg) or TRB-MES III (Walternienburg, Salzmünde A) are unique. What are they, what do they represent and what kind of processes did they stand for?

Two copper daggers: Aspenstedt and Bygholm

In 1952, near the village of Aspenstedt, district Halberstadt, Saxony-Anhalt, on the northern fringe of the Harz Mountains, a single earthen burial with a copper dagger was found under rescue conditions in the course of gravel quarrying (Ebert 1955, 70-73) (Fig. 1). The site itself is called *Großer Berg* (originally 199 m above sea level), a peri-glacial ridge, from which remarkable fertile black soil areas in the lower foreland of the Harz Mountains could be observed (Fig. 2). The site *Großer Berg* is a multi-period excavation site with burials and domestic pits of different periods, mainly of the Late Neolithic and the Bronze Age. The 'Großer Berg' itself has continually been a victim of gravel extraction. The present day situation does not really reflect the original position of the ridge in the landscape. Originally, the vast panorama over the lower settlement areas probably inspired communities from these lower areas - especially during the Late Neolithic and the Early Bronze Age (EBA) - to at least bury important people on top of the mountain (Fig. 2). However, the only burial which entered

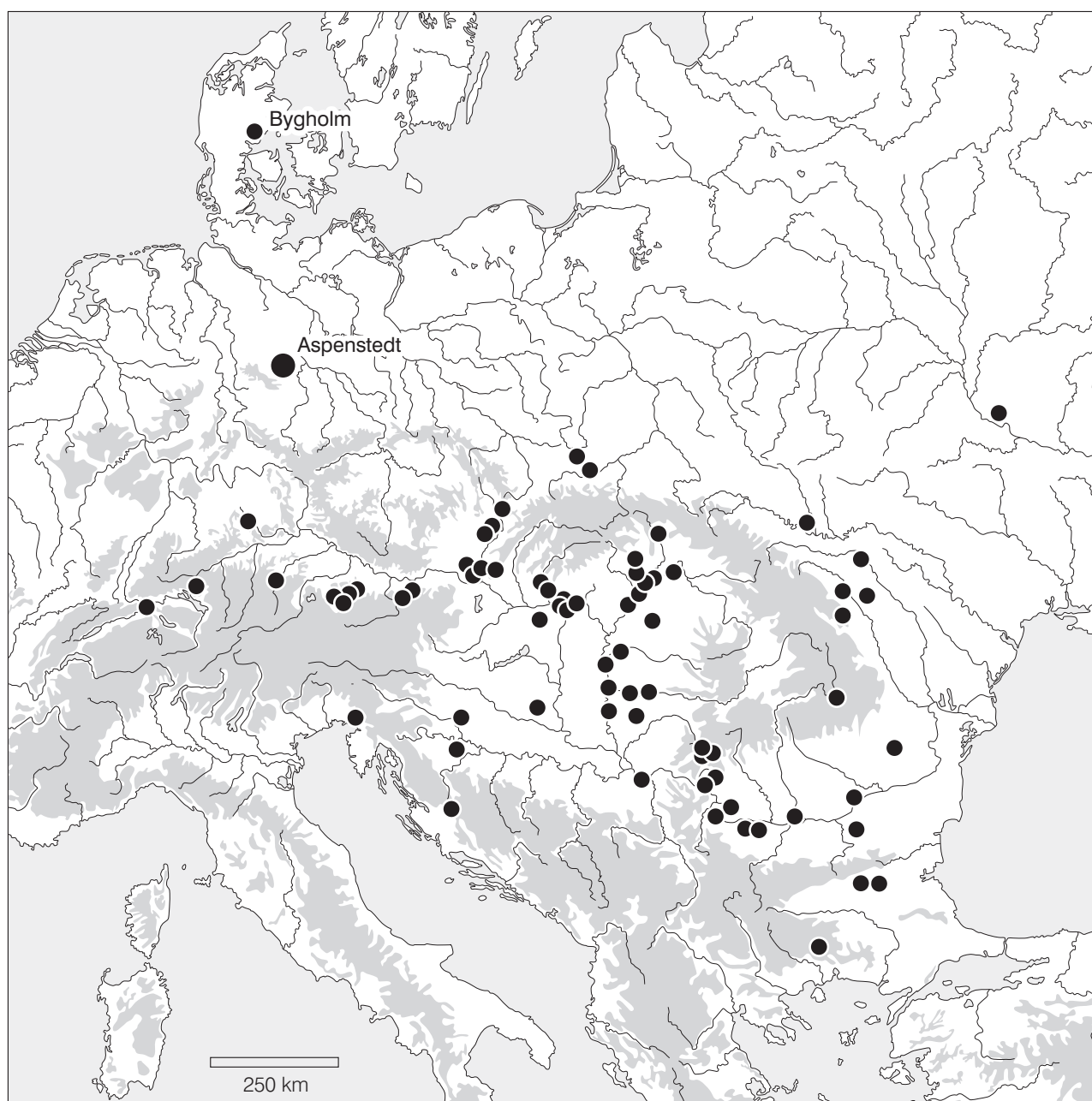


Fig. 1 The distribution of Chalcolithic daggers (after Matuschik 1998: 218, fig. 219 and 229 fig. 230 with additions). 1- Bygholm; 2 - Aspenstedt. Graphic: Ines Reese, Kiel.

the course of scientific discussion over time was the wooden chamber burial, which belongs to the Late Neolithic (see Müller 1994; Müller 2001, 329). This Late Neolithic (LN, c. 3300-2900 cal BC) collective burial contained cremations and inhumations, which were linked to typical regional pots of the Walternienburg-Bernburg style. Worship of an ancestor clearly took place at the entrance of the chamber, as fireplaces and non-disturbed offerings were discovered here. These collective burials were only one of a variety of different burial types dating to this time period and which reflect the complex customs of a society already using copper (Fischer 1956; Müller 2001: 320-389). Aside from the diversity in the ritual sphere of the society, small hamlets and enclosed domestic sites obviously reflect the social patterning within the agriculture-oriented communities in the archaeological record (Müller 2001).

In contrast to the abovementioned wooden chamber burial, the single grave '1952', which was found about 100 m to the west, was never really included in archaeological discussion. In the decades after the rescue excavation it was labeled 'Early Bronze Age' and it was also falsely pinpointed by an incorrect denotation of the find locality (compare Wüstemann 1995). This misinterpretation was first contested in 1995, when a team of metallurgists arrived to take samples at the Halberstadt Museum. In particular, Irenäus Matuschik, who had been dealing with Central European Chalcolithic daggers (Matuschik 1998), recognized the importance of the dagger. For typological reasons he assumed a dating not within the EBA, but into the earlier Late Neolithic. This determination was confirmed by the radiometric dating of the associated skeleton and by metal analyses. Meanwhile, an



Fig. 2 Aspenstedt - 'Großer Berg'. Topography of the site. 1- single burial 1952 with copper dagger; 2 - collective wooden chamber burial. Graphic: Ines Reese, Kiel.

anthropological determination of the human bones has been carried out (Lohrke 2012).

To sum up all of the evidence (compare Müller 2012), the burial '1952' from Aspenstedt-Großer Berg is a single burial of a mature male in an earthen pit with a dagger which was placed at the height of the femurs (as indicated by green rust on the bones) dated by a terminus ante quem: 3360-3100 cal BC.¹ The dagger has an elongated blade with a midrib and a triangular hill plate (length 16.3 cm; width 4.8 cm; thickness 0.3 cm; weight 40.84 g). Only one rivet hole was punched into the hill plate after casting (Fig. 3a and b). While nearly all typological characteristics are similar to the so-called Chalcolithic Mondsee-daggers of the Alpine region, the number of rivet holes of Mondsee-daggers is never less than three. As metallurgical analysis confirms, the dagger was cast of

the so-called Mondsee-copper with a very high degree of arsenic alloying.² The semi-finished product was probably imported, and then reworked with only punching one rivet hole. The slightly skewed blade confirms that the dagger was used and not produced especially for burial purposes.

Aside from the regional value of this early copper dagger, the find is of primary significance in the early evidence of dagger armaments in Northern Central Europe and Southern Scandinavia. The distribution of early copper daggers (Fig. 1) indicates a dense distribution inter alia in the Northern Alpine region and the Carpathian Basin. The only two pre-Beaker copper daggers known in the north are from our burial site in Aspenstedt and from the depot of Bygholm, Jutland. In contrast to Aspenstedt, the triangular blade of the Bygholm-dagger with its engraved imitations of a midrib is indeed a local imitation of a Mondsee-dagger: the copper

¹ KIA-3800 (human bone) 4540±50 BP; 1 Sigma: 3360-3260 3240-3100 cal BC; 2 Sigma: 3495-3470 3370-3080 3070-3040 cal BC. The lab-analyses confirmed that there had been some contamination, which makes the results appear later than they should.

² (nach Krause 2003, CD): Labornummer: FMZM2822.- Ergebnis: SN 0.005; AS 5.7; AG 0.005; SB 0.048; NI 0.022; BI 0.005; PB 0.14; ZN 0.1; AU 0.01; CO 0.005; FE 0.0.

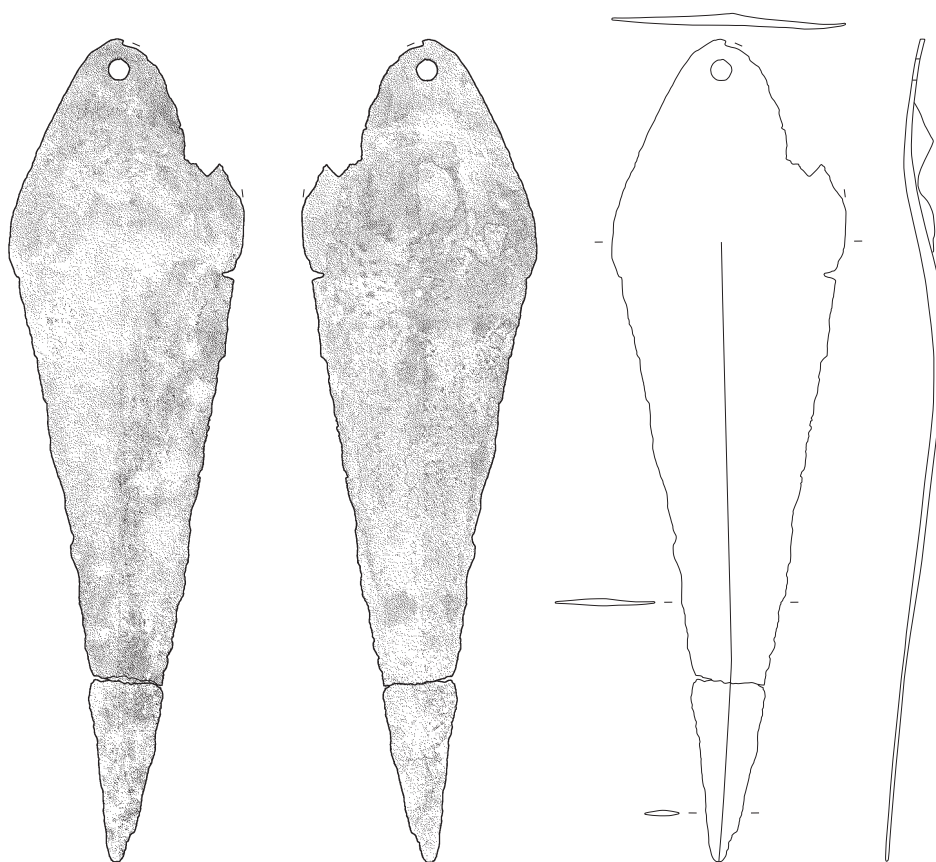


Fig. 3a Aspenstedt 1952: the copper dagger (drawing: A. Link, Kiel). Length: 11.8 cm.

alloys are not linked to Mondsee copper, but probably indicate a different copper source (Klassen 2000: 162). Remains of a Funnel Beaker, which is typologically of Early Neolithic II type, are part of the Bygholm deposit. Thus, typochronologically Bygholm is dated to 3600-3300 cal BC, contemporary with Aspenstedt.

Discussion

In both cases, we are dealing with 'foreign' concepts about armaments, as daggers were unknown in Scandinavia and Northern Central Europe (Lübke 1999; Müller 2001). Comparable to the extraordinary arm spirals of the Bygholm deposit, which link the depot-community to high-level networks of the south (Klassen 2000: 138-140), at Aspenstedt the same is obvious because of the Alpine copper source of the dagger. In the North Alpine region copper daggers mark the starting point of an armament-tradition, which was also adopted in silex daggers (Matuschik 1998; Tillmann 2002; Schlichtherle 2003; Zimmermann 2007). Both are earliest known beginning approximately 3800 cal BC, with the dendro-dating of the dagger from Bad Waldsee-Reute to 3740 den. BC.³ Further to the East these early daggers are also known from rich equipped single burials (Zimmermann 2007: 40-42) (Fig. 4). Again, the Aspenstedt dagger is linked to a male, which is buried in the tradition of early Carpathian males with daggers.

Thus, the development of daggers in the main distribution areas of copper daggers indicates an innovation in the equipment of males. The new kind of instrument became an important tool both for the display of individual power and as an armament, and could be used on different occasions. In general, the display of



Fig. 3b Aspenstedt 1952: the copper dagger (photo: A. Heitmann, Kiel). Length: 11.8 cm.

³ The wooden post P268/403-1, which the excavator associated with the dagger, was dated to 3739 BC (Mainberger 1998: 85; Billamboz 1998: 381).



Fig. 4 Individual burials with Pre-Beaker copper dagger. After Zimmermann 2007: 41, fig. 24 and 127-129; Bianco Peroni 1994, 2-7; pers. comm. Krysztof Tunia (Slowowice): 1 Aspenstedt; 2 Gosyce; 3 Kraków-Wyciaze; 4 Slonowice; 5-6 Barca; 7-8 Šebastovce; 9 Vel'ke Raškovce; 10 Bodrogkeresztúr; 11-12 Fényeslitke; 13 Budapest-Rákócscsaba; 14-15 Tiszapolgár-Basatanya; 16 Magyar-Dombegyháza; 17-18 Konyár; 19 Pusztasivánháza; 20 Batka; 21 Durankulak; 22-25 Remedello Sotto; 26 Pansella; 27 Fontanella Graziola; 28-29 Spilamberto; 30-32 Cumarola; 33-34 Borgo Rivola; 35 Grotta del Castello di Vecchiano; 36 Grotta Prato; 37 Poggio Aquilone; 38 Rinaldone.

daggers on anthropomorphic menhirs, as well as the distribution in rich graves, describes the role, which was associated with the new weaponry: individuals, especially males, indicated their own power and position within the Carpathian and circum-Alpine societies.

In contrast, Funnel Beaker societies, as exemplified by the Northern Group or the Harz area, did not end up with such a new tradition of 'weaponry' after a confrontation with first copper daggers. This is surprising, as they were on the threshold of the introduction of copper metallurgy. After some centuries with imports of heavy artefacts, local pyro-metallurgy was also developed in the TRB North-Group: the re-casting of imported copper is documented for the time-period c. 3500-3300 cal BC. Later, pyro-metallurgical activities decreased again, perhaps due to difficulties with the importation of copper (Müller 2001: 413-415). Comparable to the situation of the TRB-North-Group, in the North-Harz region imported heavy copper artefacts are known for

the period around 4100 cal BC, perhaps early pyro-technology already started with Baalberge c. 3800 cal BC, while from 3500 cal BC onwards metallurgy became a distinctive technology of the Central German society. In contrast to the Western Baltic, in Central Germany copper technology continued, based on local copper sources, without a break into the third millennium cal BC. Thus, aside from differences in intensity, pyro-metallurgy in the North is comparable to what we would expect from the circum-Alpine regions and the Carpathian basin.

Conclusions

To sum up, Funnel Beaker societies did not take over the 'dagger principle'. There is no dagger-tradition following the two copper daggers from Aspenstedt and Bygholm mentioned above.⁴ Why? One explanatory model might be seen in different principles of

⁴ Dicke Spitzen/dolkstavers are interpreted as halberds - a totally different principle (Ebbesen 1992; Lübke 1999).

societal organization. The collective timber chamber burial from Aspenstedt, which is slightly later than the single burial 1952, indicates the cooperative principle that existed within these communities. Both the appearance of collective burials as well as causewayed enclosures might represent a cooperative ideology within these Late Neolithic societies, which transformed a whole northern landscape at this time (Müller 2010). This contrasts with the developments in the Carpathian Basin and in part in the circum-Alpine regions, where individuality, especially for males, stood in the foreground of social competition. As a cooperative mode of organization would not integrate the male dagger-symbol of power into forms of social display, such a symbol was highly suitable within the southern mode of societal organization. In this sense to reject or not to reject daggers meant to reject or not to reject ways of social competition. With this in mind, the 'missed innovation' underlines the strength cooperative societies had to maintain the status quo and resist the efforts of change. While we observe such restrictions and the denial of new artefacts and technologies throughout the Chalcolithic period, the situation is totally different at the end of the Nordic Late Neolithic (Apel 2001; Vandkilde 1996): Bell Beaker daggers were followed by the tremendous silex-dagger technology after 2400 cal BC in a society in which the individual person had a more pronounced place.

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THE FLINTKNAPPER AND THE BRONZESMITH

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Abstract: The labels ‘stone’ and ‘bronze’ in Stone Age and Bronze Age reflect what archaeologists perceive as trends in material culture, but our perspective is skewed by a number of factors such as formation processes and our need for dividing the temporal continuum into discrete units. The focus of the paper is on examining this transition from the perspective of the craftspeople who were making the objects which archaeologists perceive as central for defining a Stone Age and a Bronze Age. Southern Scandinavia is the region in focus. Conditions and constraints on the flintknapper and on the bronzesmith, respectively, are compared and contrasted. No specialists can be discerned in the realm of flintknapping. Regarding metals, domestic copper/bronze casting begins somewhat hesitantly, as would be expected of a new technology. The number of forms is limited and metal alloys are heterogeneous. By Period IB of the Bronze Age, however, we see a bifurcation whereby we can distinguish between elaborate and complicated bronzeworking using a standardized raw material on the one hand, and simpler, less complicated crafting, on the other. This confirms Kristian Kristiansen’s conclusion from 1987 (p. 46) that bronze specialists had emerged by Period II.

Keywords: Flintknapper; bronzesmith, specialists, bronze, copper

Introduction

The period between 2350 BC and 1500 BC, encompassing in southern Scandinavian archaeological terminology the Late Neolithic up to and including Bronze Age Period IB (Table 1), was surely a time of turbulence in southern Scandinavia. In the retrospective view that archaeology affords us these 850 years, equivalent to about 35 generations, embrace the end of the Stone Age and the beginning of the Bronze Age. The labels ‘stone’ and ‘bronze’ reflect what we archaeologists perceive as trends in material culture, but our perspective is skewed by a number of factors such as formation processes and our wish to divide the temporal continuum into discrete units. It is worthwhile to question the validity of our temporal classification systems now and then to ask if the prehistoric agents would agree that significant changes marked the beginning of a new ‘age’, and to explore the mechanisms involved in the change. I propose to examine a particular aspect of this transition from the perspective of the craftspeople who were making the objects archaeologists see as central for defining a Stone Age and a Bronze Age, respectively.

In spite of what our terminology implies, copper-based metals were being worked in southern Scandinavia during the entire late Neolithic, just as stone crafting (including flintknapping) was practiced during Bronze Age Period I and thereafter. Daggers, sickles, axes and pressure-flaked points of flint, for instance, occur in both late Neolithic and early Bronze Age contexts. By the same token, individuals were casting naturally alloyed copper into flanged axes from at least the outset of the late Neolithic period (Vandkilde 1996; Magnusson Staaf 2002; Melheim 2012).

Table 1 Calibrated BC dates for the relevant archaeological periods. Based on Vandkilde 1996:305-6.

<i>Period</i>	<i>Date cal BC</i>
Late Neolithic I	2350 - 1950
Late Neolithic II	1950 - 1700
Bronze Age Period IA	1700 – 1600
Bronze Age Period IB	1600 - 1500

On a scale visible in the archaeological record we might conclude that individuals versed in flintknapping and individuals versed in shaping metal were performing these activities during the same time-span and in the same geographical area. Were the flintknapper and the bronzesmith the same person?

One major obstacle to answering this question is a virtually complete absence of information regarding where these crafts were being carried out during this transitional phase. As an alternative avenue of approach I propose to examine the conditions involved in knapping flint¹ and casting copper/bronze² during the period, in order to explore similarities and differences between them from the crafter’s point of view. Following that I will investigate what we can learn from the products of these respective crafts. Denmark and southern Sweden are my focus.

Conditions and constraints on the flintknapper and on the bronzesmith

Raw material availability

Besides flint, the flintknapper’s raw material requirements include stone, bone, wood or antler for making hammers and punches plus stone suitable for grinding. These needs could easily have been met by locally available raw materials. As for flint, it is widely accessible on beaches and streambeds and in the moraine soils of southern Sweden and Denmark today, as it probably was in the past (Högberg & Olausson 2007). The flintknapper in southern Scandinavia would most likely not have experienced any constraints on raw material supplies for plying his/her craft.

The bronzesmith’s raw material requirements, aside from metal, include: fuel; clay suitable for making moulds (only two stone moulds dating to this period are known, see below), *tuyères* and/or crucibles; quartz for tempering these; grinding stones; stone, bone, wood or antler for making hammers or clubs; and perhaps

¹ I use ‘flintknapper’ as a term to describe both the expert flintknapper, capable of elaborate knapping such as is required for making type IV flint daggers, and the everyday knapper.

² I use ‘bronzesmith’ to describe the person responsible for casting copper and/or bronze.



Fig. 1a Flanged axe LUHM 6485 is placed in soft clay.

b. Making the clay fit tightly around the axe.

c. The impression left by axe LUHM 6485.

d. Flanged axe LUHM 6540 fits perfectly into the impression left by LUHM 6485, although its butt end is shorter; probably due to damage. This indicates that both axes were cast in the same mould or from the same prototype.

beeswax. We can assume that all these raw materials were locally available in the surrounding landscape. What is the situation in regard to metal raw material?

For the bronzesmith, potential sources of copper, tin or copper alloy are: a) smelting of naturally occurring ores, b) ingots, or c) recycled metal objects. Only options b and c would have been available in southern Scandinavia, however, as neither copper nor tin is local to this area.

Regarding option b, Helle Vandkilde (1996:205) lists 22 examples of objects dating to Late Neolithic II from Denmark which might be ingots; for instance, the heavy rings in the Late Neolithic Pile hoard (Weiler 1994:48). Bronze ingots from the Early Bronze Age are absent, however, at least in the Danish material (Vandkilde 1992:125; cf. Buchwald & Leisner 1992:96).

This leaves us with option c. There is general agreement that remelting alloyed metal was the main source of raw material for Scandinavian smiths, at least until Period I (Levy 1991:59; Liversage 2000:17). Interestingly, the earliest Bronze Age objects are not made from late Neolithic metal, however (Liversage & Liversage 1989:74). In fact Liversage and Liversage see this as one of the most important markers for a discontinuity between the Stone and the Bronze Ages (Liversage & Liversage 1989:67). By Period IB of the Bronze Age we see a compositionally standardized full tin bronze completely dominating Denmark and much of Europe, according to Vandkilde (1996:246). David Liversage (2000:74) does not fully concur, however. He concludes on the basis of impurity patterns in copper that there were two main types and some minor types of copper in use in Denmark during Period I. When he added the information about tin content,

which tells us about alloying practices, he found that these two metal types may have been the products of different workshop traditions (Liversage 2000:17).

Consequences of raw material availability for gaining access to a craft

While the flintknapper's raw material was widely available in southern Scandinavia, it is safe to assume that the bronzesmith was faced with limitations regarding access to the raw material for his/her product. This factor has a particularly significant impact on how a craft is learned. A ubiquitous raw material permits trial and error and allows practice. It seems reasonable to assume that most Stone Age people were flintknappers and all Stone Age individuals were most likely taught flintknapping by their parents as an essential life skill (Olausson 2012). The ubiquity of flint and flintknappers meant that some particularly talented knappers emerged. The combination of natural ability and a plentiful raw material allowing practice are prerequisites. These knappers are visible in the archaeological record through their exceptional products, such as well-made type IV flint daggers (Olausson in press).

During the late Neolithic the technology involved in casting copper or bronze represented an innovation quite different from any technology already existing in Stone Age society, according to Ben Roberts (2008:362). Given raw material limitations, the introduction of metallurgy in southern Scandinavia required building up a stockpile of bronze. Eventually a balance between production and consumption was reached and supplies could thereafter have been maintained by modest annual accrue-ment (Kristiansen 1981:258). Even after that stage, however, access to



Fig. 2 The two bronze scimitars from Rørby, probably deposited together. Length c. 50 cm. Photo: The National Museum of Denmark.

copper/tin or bronze was not unlimited. Failures during the casting process can be rectified by remelting, which means that some trial and error is possible. Nonetheless, oxidation in connection with each melt (Vandkilde 1992:125) is a limiting factor. Further, with the lost wax method each casting episode is unique as the mould is broken to release the cast object. This reasoning means that bronzesmiths were never as common as flintknappers. The south Scandinavian bronzesmith was probably taught by someone who already had theoretical knowledge of and/or practical experience with the process, rather than each individual learning by trial and error (cf. Melheim 2012:40). Next I wish to explore the knowledge (theoretical) and the know-how (practical) required for each type of craft.

Knowledge is theoretical and can be communicated by words; it is a recipe for action. Know-how is practical and embodied; it can be learned only by doing. The greater the know-how needed for carrying out a craft, the longer time is required for practice (Apel 2001:27-29; Pelegrin 1990:118).

Knowledge: the recipe for action

I would argue that we can see differences in the amount of knowledge required of the bronzesmith as opposed to the flintknapper. Flintknapper knowledge would include for instance where to find flint and the *chaîne opératoire* for making a particular object. While the *theoretical* basis for flintknapping (knowledge) can be explained in five minutes, becoming a proficient knapper (know-how) takes a great deal of practice (Olausson 2008).

In contrast, casting bronze requires access to several recipes for action. To enumerate these we need to know something about how casting was done in southern Scandinavia during the Late Neolithic and Early Bronze Age. Unfortunately, however, the archaeological record suffers from an almost complete lack of direct evidence dating to this period (Bodin 1998; Melheim

2012:46; Oldeberg 1976; Stilborg n.d.; Vandkilde 1996; Weiler 1994). Only two stone moulds with a possible date to Bronze Age Period I are known from the Scandinavian area: one half of a bivalve mould for a Bagterp point found at Österby in Östergötland (LUHM [Lund University Historical Museum] 21014; Oldeberg 1943:140) and a bivalve mould from Bliå, Värmland (Oldeberg 1938). Therefore, we can only assume that casting was usually carried out in moulds of clay or sand which have not survived. Direct evidence for crucibles is also weak. Only one example of a crucible possibly dating to this period, from Ordrup, Denmark, is known (Rønne 1989:107). Assuming this crucible is typical we might say that knowledge of suitable clay as well as a recipe for the amount and type of temper are necessary for making clay moulds and crucibles (Pettersson 2011; Weiler 1994:49). And if the lost wax method was employed the bronzesmith would need knowledge of how to gather and prepare wax (Rønne & Bredsdorff 2011; Weiler 1994:49).

The most complicated part of the process, requiring a large measure of theoretical knowledge, involves achieving the optimal composition of the metal. B. Ottoway (2001:99) maintains that alloying, i.e. mixing copper and tin, requires specialist knowledge. However, as noted above, there is no evidence that Scandinavian smiths were alloying at this time. Rather, they relied on remelting alloyed metal, at least until Period I (Levy 1991:59; Liversage 2000:17).

Examining the question from a chronological perspective we see some significant changes occurring during the transitional period with which we are dealing. An analysis of 77 late Neolithic low flanged axes showed that 51% were of mixed metal composition (Liversage & Liversage 1989:64). Vandkilde (2000:16-17) characterized the earliest flanged axes as completely lacking standardization in technological procedures and material forms. This picture changes as time passes, however, and during Bronze Age Period I greater homogeneity emerges (Melheim



Fig. 3 The flint scimitar from Favrskov. Length c. 35 cm. Photo: The National Museum of Denmark.

2012:112; Vandkilde 1992:121). However, standardization was not total, according to Liversage (2000). His examination of impurity patterns for Period I objects in Denmark showed that two major types of copper were in use. He found a correlation between tin content and ore type, where one bronze type carried definite amounts of tin, meaning it was carefully alloyed, while the other type was much less standardized (Liversage 2000:17-18). Two things seem to be happening here: a general increase in standardization of ores and metal composition in the Bronze Age as opposed to the late Neolithic, and an emergence of two levels of knowledge in regard to metal composition during Bronze Age Period I. We will return to these observations in the conclusion.

Know-how: practical and embodied

Know-how means practical knowledge or embodied expertise. I propose that whereas more knowledge was necessary for the bronzesmith than for the flintknapper, the opposite is true of know-how. Becoming a good flintknapper requires practice and for those who achieved the highest levels of expertise, such as the knappers who made the type IV flint daggers or the scimitar from Favrskov (Rønne 1986; Fig. 3), a great deal of practice must have been necessary (Olausson in press, 2008). Knapping requires skills such as hand-eye coordination and control of bodily movements during blows (Olausson 2008). I can see few elements in bronzecasting which require comparable bodily control. What can we say about the know-how required of the bronzesmith?

Let us examine the various steps involved in bronzecasting in order to evaluate the minimum amount of know-how which might be involved. Melheim provides an illustrative description of know-how involved in casting:

When bronze is melted in an open crucible, a metamorphosis from solid to liquid form and a subsequent change of colour is easily observed. Close observation of the structure and colour of the metal, to assess the right moment for pouring the liquified metal into the mould, is essential for a successful cast....This involved visual observation, hearing, smelling and feeling. Arguably, this know-how was integrated in the motions and body-techniques of a skilled craftsman; embodied and non-discursive, a competence that rested on sensory impulses and muscular memory, as opposed to verbalized or symbolic explanatory models used to rationalize and predict physical change in industrial times. (Melheim 2012:9)

This description seems to imply a high level of know-how as a requisite for casting. However, experimental evidence paints a more variable picture. Simon Timberlake carried out experiments with students in Great Britain. Under instruction, they were able to smelt copper ore in crucibles and co-smelt copper and tin to make bronze. They succeeded in casting the metal in ingot or axe moulds, even when this was their first attempt at metallurgy. The whole process, including making moulds and casting flat axes and small daggers, was carried out in less than a week (Timberlake 2007, 2009). Sara Bodin (1998:110) relates the experience of Torbjörn Sjögren, who has worked with schoolchildren and the general public for ten years. Sjögren is cited as saying that two days are required for learning to make a bronze razor. Andreas Nilsson (2008) performed experiments to determine the difficulty involved in casting in a soapstone mould as opposed to lost wax casting. When he began his experiments he had no previous experience with bronzecasting, although he had gained (theoretical) knowledge by talking to people with such experience. On his first day of casting bronze in a soapstone mould he experienced five failures and two successes; by days three to five he had 12 failures and 13 successes. Based on his own experiments, Preben Rønne says that making a bivalve mould of clay was easily within the reach of any member of the society (Rønne 1993:89). Thus, these accounts indicate that know-how requirements, at least for simple casting, were low.

However, Sue Bridgford points out that the level of difficulty rises when casting thin blades on objects such as daggers, rapiers and swords (Bridgford 2002:123). In southern Scandinavia, domestic casting of such objects appears first towards the end of Bronze Age Period I. Two more technological innovations which appear at this time are the socketed spearhead, requiring core casting, and axes with high-cast flanges (Liversage & Liversage 1989:66). Demands on practical know-how increase substantially with these elaborations.

Metallurgical analyses of flanged axes from Bronze Age Period I show that intensive hammering and annealing was required for shaping many of the alloys in use (Buchwald & Leisner 1990:82). Bridgford claims that hammering the metal in order to thin and harden it is a highly skilled task. She writes further that annealing at too high a temperature can cause the metal to crack (Bridgford 2002:124). Here we see facets of bronze crafting requiring a high degree of know-how. These emerge after metalworking has been practiced for some time in southern Scandinavia, however. In its

early stages the degree of know-how was low and it does not appear as though bronzecasting required extensive practice.

Up to this point I have ignored the question of decoration on the bronze objects. Elisabeth Herner argued that Early Bronze Age spiral ornamentation was applied by punch after the object was cast (Herner 1987). Indeed, examples of clumsy ornamentation can be seen in Andreas Oldeberg's catalogue (e.g. Oldeberg 1976 no. 3305). Herner's attempts to use this technique resulted in obvious mistakes, but a professional craftsman was able to copy the design with 'a minimum of effort' (Herner 1987:144). However, Rønne's experiments demonstrated that ornamentation could also be cast (Rønne 1991; Rønne & Bredsdorff 2011). Helle Vandkilde argues that cast ornamentation on flanged axes was present in the Late Neolithic II (Vandkilde 1996:263). Convincing arguments have also been presented in favour of the idea that the ornamentation on three of the bronze scimitars dated to Period IB (Fig. 2) was cast (Jensen 2002:74). My point here is that achieving a high quality result in regard to decoration is easier (i.e. requires less physical expertise/know-how) when it is cast.

While some of the processes involved in making the metal objects from the late Neolithic and Period IA of the Bronze Age required manual dexterity (know-how), in general the level of technology in evidence did not require special skills or expertise. By Period IB we see some objects requiring intensified know-how, however. If we accept this scenario then we find a not insignificant difference between flintknapping and bronzecasting. I have argued elsewhere (Olausson in press) that even the most highly crafted flint daggers were not made by professional specialists but rather by especially talented individuals with the time and the inclination to polish their skills. However, we know from studies of modern knappers that reaching this level of know-how requires practice over many years. Data on the degree of know-how required for casting the Late Neolithic and Period IA objects are scarce, but I believe they indicate that the level of expertise required could have been attainable by practically everyone. This is not true from Period IB, however (see below). Next we will explore what information can be gleaned from the products themselves.

Evidence for differences in expertise on objects of flint and metal

It is not far-fetched to argue that the amount of skill or expertise held by the crafter may be visible in the products, although there are practical considerations which may hamper our efforts to study this. Flintknapping is a subtractive technique; once the flake is removed it cannot be replaced and knapping mistakes have a good chance of being preserved in the archaeological record. An example of this approach can be found in Olausson (2008). Here I set up criteria for classifying Scandinavian flint daggers in regard to how skillfully they were made and applied these in an examination of c. 500 flint daggers belonging to types I-VI. I found substantial variations within each type, from daggers made with low skill to daggers made with a high degree of skill. I argued that the most reasonable explanation for these differences is the different levels of knapping ability among the knappers (Olausson 2008).

Studying the quality of workmanship on metal objects is fraught with source-critical pitfalls, however. The most serious of these is the fact that, due to remelting, casting mistakes will not necessarily be preserved for the archaeologist to observe. Faulty casting has a theoretical chance to turn up in a founder's hoard but we lack such hoards from the period in question. Therefore, it is possible

that any evidence for unskilled work, if it existed, is not preserved. Nevertheless, I have made a modest attempt.

A team consisting of archaeologist Andreas Nilsson, conservators Bernd Gerlach and Lovisa Dal, and myself examined 37 metal copper/bronze artefacts dating to Late Neolithic I, Late Neolithic II, Bronze Age IA and Bronze Age IB from the collections of the Historical Museum in Lund (Table 2). The objects belong to types which Vandkilde (1996) identifies as domestically cast and all were found in southern Sweden. We noted features such as symmetry, complexity of form, and surface regularity. We examined holes in the metal in order to determine if they were due to casting mistakes (blistering) (Bridgford 2002:125; cf. Nilsson 2008) and recorded observations regarding grinding, hammering or damage.

We observed no major differences during any of the four periods regarding the quality of workmanship. We saw little evidence for clumsy workmanship or beginner's work. The differences between what we judged to be the poorest and the best workmanship were slight. Furthermore, there did not seem to be any obvious chronological development; both poorly-made and well-made objects were present from the early Late Neolithic and continued to be present during Bronze Age Period IA and IB (cf. Bridgford 2002:128), although the appearance of Bagterp and Valsømagle Points in Period IB, as they possess both sockets and thin blades, does represent a step up in complexity at this time.

One unexpected result of this study was the discovery of two flanged axes which appear to have been cast in the same mould or from the same prototype (Fig. 1a-d). Both axes were turned in as stray finds; axe LUHM 6485 is listed as coming from a mound while LUHM 6540 lacks further contextual data.

Conclusions

During the early Neolithic, members of the Funnel Necked Beaker Culture were circulating copper flat axes in Northern Europe. There is even evidence that such axes were being cast here (Klassen 2000:308; Magnusson Staaf 2001:23). However, this activity did not give rise to a metal age. One thousand years later, metallurgy was reintroduced to Scandinavia (Klassen 2000:310). This time the idea caught on and stayed for good, eventually resulting in an age of bronze.

During the period between 2350 and 1500 BC people were knapping flint and casting objects of copper and then bronze in southern Scandinavia. As would be expected of a new technology, domestic casting begins somewhat cautiously. Smiths were making only flat axes in Late Neolithic I, progressing to somewhat more complicated low-flanged axes by Late Neolithic II. Vandkilde (2000:16-17) notes that the earliest flanged axes lacked standardization regarding technological qualities and forms. As time passes and we enter Bronze Age Period IA, we find an increase in variation of forms produced but the number of forms in domestic production is still quite limited. However, this development is accompanied by greater homogeneity in metal content (Melheim 2012:112; Vandkilde 1992:121), suggesting increased knowledge. As we move into Bronze Age Period IB we find a significant increase in the number of product types, with the addition of for instance several types of points requiring high casting know-how. Vandkilde (2000:27) remarks that the amount of metal in circulation increases markedly at this time. She also notes that flanged axes differentiate into two groups at this stage: a larger group containing small, inconspicuous axes which are

Table 2 Metal objects examined to determine workmanship. Types are classified according to Vandkilde 1996. Tin percentages are taken from Cullberg 1968. n.d. = no data available. LUHM = Lund University Historical Museum. LN I = Late Neolithic I, LN II = Late Neolithic II, BA IA = Bronze Age Period IA, BA IB = Bronze Age Period IB.

<i>Date</i>	<i>Type</i>	<i>% Sn</i>	<i>Parish</i>	<i>Findspot</i>	<i>LUHM Number</i>	<i>Observations</i>
LN I	5	0.2	Lilla Bedinge	Lilla Bedinge, bog	5130	Surface appearance may be due to heating prior to breaking
LN I	5	trace	Tygelsjö	Tygelsjö, east of church	12597	Good workmanship
LN I	5	trace	Borgeby		12634	Heavily damaged
LN I	8	n.d.	Vellinge	Vellinge nr 22 + 30	27860	Average workmanship
LN II	A2	0.6	Hörby		3507	Slight edge damage
LN II	A2	7.4	Simris	Simris village	6485	Fault near edge on one face; slightly twisted; heavily used
LN II	A5	8.5	Simris	Simris village	6540	Some potlidding
LN II	A1	trace	Vallby	Vallby	11051	Asymmetric; heavily corroded
LN II	A1	2.3	Ringsjö	near Ringsjön	12390	Poor workmanship
LN II	A1	trace	Malmö	Oxie, Fredriksberg	19336	Asymmetric edge; heavily corroded
LN II	A1	0.1	Kvistofta	Gantofta	20024	Evenly spaced nicks on flange; result of metal testing?
LN II	A1	10	Lilla Bedinge	Lilla Bedinge nr 2, Ångarna	28676:34	Edge is poorly cast
LN II	A2	trace	Löderup	Löderup village	12581	Surface appearance may be due to heating prior to breaking
LN II	A2	trace	Gislöv	Gislöv	18560	Symmetric edge; heavily corroded
LN II	A2	trace	Lilla Bedinge	Lilla Bedinge nr 1	20937	Asymmetric edge, potlidding
LN II	A2	9.1	Hammarlöv		25038	Good workmanship
LN II	A5	8.2	Malmö	Bunkeflo Vintrie nr 1	25775	Uneven flanges; heavily corroded
LN II	A5	10	Köpinge	Gärds Köpinge	28117	Good workmanship but asymmetric edge
LN II	A6	1.2	Burlöv	Arlöv	28678	Good workmanship
BA IA	Torsted point	n.d.	Södra Vram	Bökeberg	20548	Good workmanship except for 1 hole
BA IA	B2	7.6	Svedala	Marktflecken	22245	Left and right flanges do not resemble each other
BA IA	B2	10	Skytt		4410	Good workmanship but some potlidding
BA IB	Bagterp point	n.d.	Vallby		11112	Good casting quality, decoration clumsily done
BA IB	Bagterp point	n.d.	Lund	east	12718	One shoulder imperfectly cast
BA IB	Valsömagle point	n.d.	Helsingborg	Raus	16129	Good workmanship; corroded
BA IB	Valsömagle point	n.d.	Burlöv	Stora Bernstorp	27042:25	Good workmanship; but 5 pinholes are evident
BA IB	C3	3.8	Stora Råby		2818	Good workmanship
BA IB	C3	10	Sankt Ibb	Ven	2825	Good workmanship but some edge asymmetry
BA IB	C3	9.3	Simrishamn		8662	Rough and uneven surface; heavily used
BA IB	C3	9.1	Vittskövle	Vittskövle	10504	Good workmanship; heavily used
BA IB	C3	8.7	Hemmesdynge	Villen	17146	Poor workmanship
BA IB	C3	10	Kävlinge		19594	Some potlidding; heavily used
BA IB	C3	6.1	Ivetofta	Grödbby	25600	Good workmanship, heavily used
BA IB	C3	7.7	Sankt Olof	Älmhult	27536	Asymmetric edge, potlidding
BA IB	C3	10	Södra Åby	Elleberga	27983	Good workmanship; heavily used
BA IB	C5	5.6	Högestad		12635	Good workmanship
BA IB	C5	n.d.	Lund	Sandby	28495	Surface appearance may be due to heating prior to breaking

coarse and often show damage from use, and a less numerous group of long, slender, delicately built axes. Domestic Period IB metalwork includes unique objects which have neither antecedents nor successors, such as the bronze scimitars, of which six are known (Vandkilde 1996:243). Given their size and complexity, I would suggest that the scimitars required a higher level of technical know-how than we have seen previously. Two of the scimitars (Fig. 2) were deposited together, and morphological similarities among four of them have led many to conclude that they were made from the same prototype (Forssander 1935:44; Mathiassen 1957:43; Vandkilde 1996:232). Kristian Kristiansen (1987:33) writes that here, at the threshold to Period II, we see an explosive development of local metallurgy in southern Scandinavia which embraces a complicated technology including modelling, casting, hammering, engraving, fitting gold and amber, etc.

During a time when some people were exploring the potentials and limitations of the new medium metal, others were pushing flintknapping to its limits. The Favrskov flint scimitar (Fig. 3) and the short dagger of flint from Næsbyjerg, both dated to Bronze Age Period IB (Lomborg 1973:70f.; Vandkilde 1996:231f.), are objects of knapping *tour de force*. However, as far as we know they are unique. I maintain that the knapper who made them was not producing to meet market demand. Rather, they are the products of an especially skilled individual demonstrating his/her prowess or perhaps just pushing the limits because he/she can.³ They mark the flintknappers' swan song as no comparable elaborate flint objects are known after this period.

By Bronze Age Period IB we have reached a bifurcation point in the bronze casting craft. Some individuals have fully mastered the craft and innovations and complex casting, as seen for example in domestically cast swords, are in evidence (Artursson et al. 2005: 504; cf. Rasmussen & Boas 2006). At the same time simpler casting for household needs continues. Artursson et al. (2005:511) maintain that by Period IB the amount of bronze in circulation had reached a point at which it could be harnessed for building social stratification. Kristiansen (1981) advocated that the 'fully developed Bronze Age' begins in Period II. He also suggested that bronze specialists had emerged by then (1987:46). Jørgen Jensen goes so far as to say that within a few hundred years after 1700 BC the bronze crafting in southern Scandinavia was of such high quality that it was among the best on the European continent (Jensen 2002:69).

Were the flintknapper and the bronzesmith the same individual? My position is that all members of the Stone Age community were flintknappers, although, as is true of any activity requiring bodily action, some were better than others. Because of interest, perhaps combined with native talent, some knappers explored the limits by making exceptional objects. But these artefacts occur in limited numbers and their makers were not specialists. In the same way as we find well-made and poorly-made flint daggers, we find well-made and poorly-made flanged axes. Characterized as it is by lack of uniformity of forms and raw materials, the early domestic metal casting was not in the hands of a few specialists with exclusive knowledge and/or know-how.⁴ Melhiem points to

the rapid spread of metallurgy in the late Neolithic to support the idea that metallurgical knowledge was not esoteric, at least in the beginning (Melheim 2012:18). Towards the end of Bronze Age Period I, however, we see a bifurcation whereby craft specialists capable of mastering an increasingly complex technology are emerging. Apparently this development continued, for certainly by the late Bronze Age we see clear indications for specialized workshop locations, such as Södra Kristineberg (Högberg et al. 2011), on the one hand, and small-scale casting to fill household needs (e.g. Nilsson 2008), on the other.

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³ Walter Osika, MD specializing in psychiatry, notes that practice and refinement are fundamental to art and crafts. He suggests that our brains lead us to repeat actions in order to improve. This drive to get progressively better at something provided an evolutionary advantage (Nasr 2012:B12).

⁴ Vandkilde (1996) provides distribution maps showing the find locations for metal objects from LN I, LN II, Bronze Age Period IA and Bronze Age Period IB in Denmark. With the exception of western Jutland the finds are fairly evenly distributed over the landscape. No workshops or production centres are in evidence. I carried out a similar analysis for the finds from the province of Scania in southern Sweden and found that here too the products are evenly distributed in space.

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A ZOOARCHAEOLOGICAL PERSPECTIVE ON THE ORIGINS OF METALLURGY IN THE NORTH EUROPEAN PLAIN: BUTCHERING MARKS ON BONES FROM CENTRAL POLAND

Arkadiusz Marciniak and Haskel Greenfield

Abstract: The origin of metallurgy is usually monitored via the appearance and frequency of various types of metallurgy. This paper presents an analytical procedure for identifying and mapping the introduction and spread of metallurgy to regions based upon the relative frequency of metal versus stone tool slicing cut marks in butchered animal bone assemblages. Quantifying the distribution of metal versus stone tool types over time and space provides insights into the processes underlying the introduction and diffusion of a functional metallurgical technology for subsistence activities. Prehistoric data from central Poland are presented to illustrate the utility of the procedure. Data from the Early Neolithic (c. 4500 BC) through the end of the Bronze Age (c. 700 BC) are used to calculate the frequency of use and relative importance of stone and metal implements over time in central Poland. The results clearly demonstrate that metal tools are adopted slowly through the entire length of the Bronze Age and that the advent of the Bronze Age did not entail the wholesale disappearance of lithics for butchering animals.

Keywords: Metallurgy, Europe, North European Plain, Neolithic, Bronze Age, Butchering Marks, Zooarchaeology, Animal Bones, SEM

Introduction

Metallurgy was a constitutive element of the Bronze Age and has understandably attracted huge scholarly interest. Investigations on the origins of metallurgy, acquisition of raw materials, production process, distribution mechanisms, exchange patterns and depositional practices became a backbone of Bronze Age archaeology throughout Europe and beyond. Not surprisingly, it has also been of considerable significance for Kristian Kristiansen. He has been especially interested in overall social context of metal production, distribution and deposition. In particular, he has investigated in detail such issues as metallurgical know-how, transmission of metallurgical and related technological skills, the emergence of social and ritual value systems originating from the dispersal of bronze throughout Europe, political and economic control of metal production and distribution as well as contribution of metal production and use to the emergence of warfare, warrior elites and chiefly culture (e.g. Kristiansen 1987, 2001; Kristiansen & Larsson 2005). There is no doubt that the invention, adoption and ultimately the widespread use of metallurgy transformed European lifestyles from ancient to modern times. However, relatively little is known about the use of early metal tools or their rate of adoption.

The earliest metal to be intensively exploited across the continent appears to be copper (e.g. Branigan 1974; Shepherd 1980; Tylecote 1986, 1987, 1992; Wertheim & Muhly 1980). Copper metallurgical technology appears earliest in south-east Europe beginning in the local Late Neolithic of the Balkans (c. 4500 BC¹) where it may have been independently invented (Jovanović 1980; Renfrew 1969). It quickly spread via diffusion across Europe and reached the North European Plain in the second half of the fifth millennium BC (Kruk & Milisauskas 1999; Kruk 2008).

During the fourth millennium of the North European Plain, copper was widely integrated into the local cultures. While not

very common, copper objects were widely distributed across the region, mainly in Kujavia and Silesia (Kruk & Milisauskas 1999:94). Towards the end of the fourth millennium BC, the frequency of copper objects appears to have undergone a decline associated with the social and economic disintegration of the Middle Neolithic communities of the region (e.g. Funnel Beaker and Globular Amphora Cultures – Rzepecki 2004). In the third millennium BC, the frequency of copper objects increased in comparison to the preceding period (Kadrow 1995: 83-84). The increase in copper frequency is associated with the local Polish Late Neolithic Corded Ware culture of the region along with its ascendant groups. These Polish Late Neolithic groups are chronologically equivalent to the Chalcolithic cultures in regions to the south (Greenfield 2010; Kruk & Milisauskas 1999).

At the end of the third millennium BC, bronze objects began to be commonly found with the introduction of the local Bronze Age. Bronze increased in popularity vis-à-vis copper and continued to be widely used through to the end of the Bronze Age (c. 700 BC) and the early Hallstatt period (e.g. Czebreszuk 2001; Kadrow 1995).

Most of the evidence for the origins and spread of metallurgy derive from the few metal artefacts occasionally recovered from archaeological contexts (e.g. Branigan 1974; Chernykh 1992; Shepherd 1980; Tripathi 1988; Tylecote 1986, 1992; Kruk & Milisauskas 1999; Kadrow 1995). This approach, however, is fraught with problems. The number and types of metal tools from the earliest metal-using prehistoric periods (Late Neolithic and Bronze Ages) is quite small and does not reflect the full range that was available (Olsen 1988: 337). Metal was such a precious commodity in antiquity that it was mostly recycled. Metal would typically be discarded only when there was too little to salvage, a condition that would have been relatively infrequent. The high frequency of broken or worn metal tools and weapons that were ritually deposited, or hidden and forgotten in hoards, is consistent with this view. Otherwise, we would expect to find more metal objects discarded randomly across sites, as with most other more

¹ All dates cited in this chapter are based on calibrated radiocarbon dating, unless otherwise noted



Fig. 1 Slicing cut marks on bone from site of Sławsko Wilkie, site 12, feature 6a/32 (Poland Sample 87, photo DSCN4745).

common artefacts (e.g. Blajer 1990; Harding 2000). For all of these reasons, there is little direct evidence among metal artefacts to show both the range of types and to determine exactly when the transition from a stone- to a metal-oriented technology occurred.

Recently, a new approach to this issue has been pioneered using a much more commonly available data source: the zooarchaeological remains (i.e. animals from archaeological contexts). These are generally the second most common category

of finds on later European archaeological sites. Slicing (or cut) marks related to carcass processing activities are found on a significant percentage of such remains at almost every site (Fig. 1). These provide a means for qualitatively and quantitatively monitoring the introduction and spread of metals for processing animals across a region and through time (e.g. Greenfield 1999, 2006). By using this more commonly available form of data, it is possible to avoid or minimize the pitfalls of relying upon a too-narrow database for making general observations and conclusions about the process under investigation.

Slicing marks are the residual remains of the various stages for processing animal carcasses, including slaughtering, butchering and skinning activities. A slicing mark is created by the drawing of a knife (or dagger) blade across the surface of the bone. It should not be confused with a chop mark, which is created by the impact of a knife, sword, or axe-like blade. Slice marks also should not be confused with the cutting action of a saw, which requires the blade to pass back and forth over the same position, leaving a very different shaped groove. The marks produced by chopping and sawing are easily distinguished from those of slicing (Olsen 1988; Shipman 1981).

This paper presents a preliminary overview of some aspects of our investigation into the evolution of metal knives for processing animal remains in the North European Plain. Data from several Neolithic (Early and Late), Eneolithic and Bronze Age sites in the



Fig. 2 Map of Poland showing location of archaeological sites used in the analysis. 1 Bożejewice, site 22/23; 2 Bruszcze, site 5; 3 Ciechrz, site 2; 4 Kierzkowo, site 1; 5 Krusza Podlotowa, site 2; 6 Kuczkowo, site 5; 7 Łojewo, site 35; 8 Miechowice, site 7; 9 Podgaj, site 7A; 10 Radojewice, site 29; 11 Siniarzewo, site 1; 12 Sławsko Wielkie, site 12; 13 Słupca; 14 Smuszewo; 15 Węgiec, site 12; 16 Wilkostowo, site 23/24; 17 Żegotki, site 3.

Kujavia and Great Poland regions of Poland are analysed in order to determine when metallurgy was first introduced for processing animals (Fig. 2).

Analytical methodology

The method utilized here is briefly summarized next, but is more fully described elsewhere (Greenfield 1999, 2000, 2002, 2006; Olsen 1988; von Lettow-Vorbeck 1998). It consists of several procedures, each of which is described below.

Based on extensive experimental research by Greenfield (1999, 2000, 2002, 2006) and others (e.g. Bello & Soligo 2008; Christidou 2008; Olsen 1988; von Lettow-Vorbeck 1998; Shipman 1981; Walker & Long 1977), a number of criteria are known and widely accepted for distinguishing between stone and metal tool slicing marks. These are summarized below.

Metal knives leave grooves that are deep and symmetrically V-shaped in profile with steep sides (Fig. 3). They culminate in an apex that has a sharp point. The groove can be deep and narrow or wide depending upon the nature of the blade. Metal knives can create a flat-bottomed U-shaped profile when they have been dulled. The sides will be relatively smooth and uniform, without ancillary striations. They leave either no striations or striations of a more uniform depth and spacing than when stone tools are used. In general, metal knives produce a cleaner and more even groove (except for scalloped-edge knives and saw-like blades).

Chipped stone tools (whether flakes or blades) produce a shallower, and more variably-shaped groove (Fig. 3). Because of the sinuosity of their cutting edges, chipped stone tools tend to produce wider and more irregular grooves. Chipped stone tool slice marks are always uneven in cross-section, with one side rising relatively steeply to the apex, then descending gradually or in a series of ancillary ridges. Generally, on a unifacially produced, but not retouched flake or blade, there will be one or more parallel striations. They are found lateral to the apex of the groove and are of uneven length and thickness. When viewed in a Scanning Electron Microscope (SEM), the lateral striations appear as parallel ridges along the side of the apex of the ridge because we are viewing inverted moulds of the original groove. The lateral striations reflect the uneven (and often retouched) dorsal surface of the stone blade, while the smooth side reflects the smooth bulbous ventral surface of the blade. Retouching adds more variability to the face of the tool and makes for a rougher side to the groove. In unifacially retouched flake/blades, one side is rougher than the other. In bifacially retouched flake/blades, both sides are very rough in profile.

Data

Remains from 17 sites extending from the Early Neolithic to the Late Bronze Age of central Poland were examined for this analysis. Even though the focus is on the metal-using periods, remains from the Neolithic were included in the analysis to ensure that a significant percentage of remains were from an unambiguous pre-metal period. This would function as a baseline period from which no metal-related marks were expected. Each of the specimens originated from secure temporal and spatial contexts.

A small sample (n=123 fragments) was selected as a test of the above method. Of these, it was subsequently determined that only 112 specimens were actually the result of butchering activities.

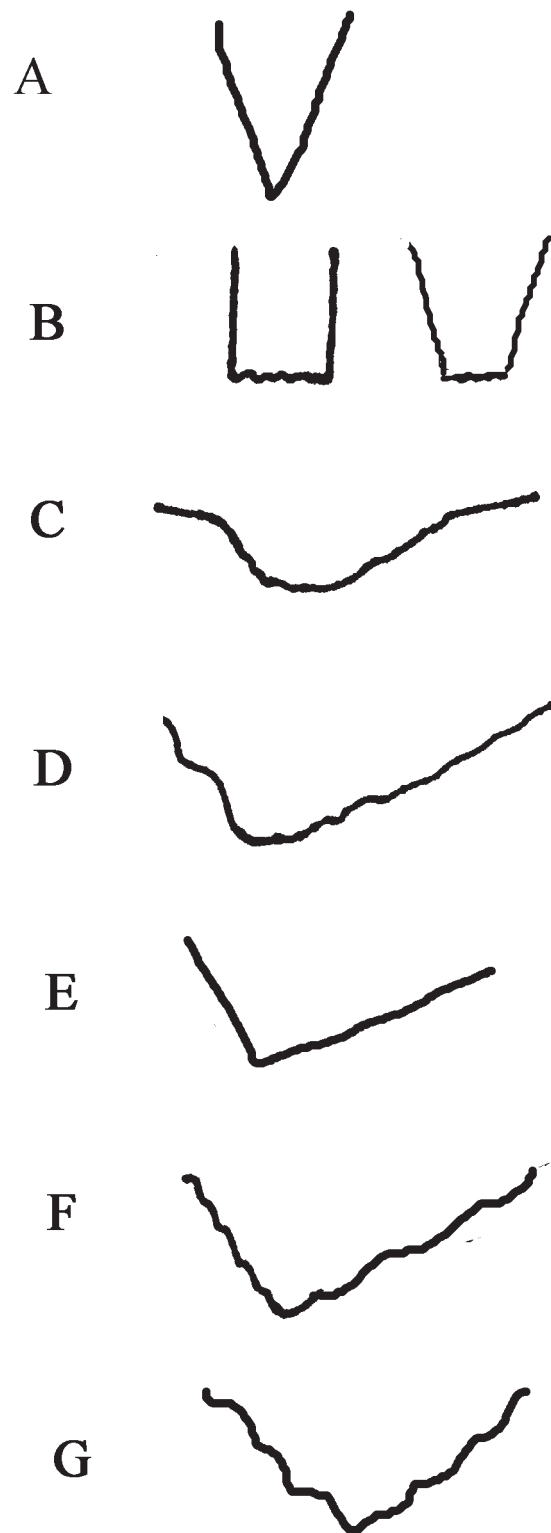


Fig. 3 Stereotypical profiles of experimental grooves made by stone and metal blades. A Profile of metal blade - sharp flat-edged; B Profile metal blade - dulled flat-edged; C Profile of metal blade - serrated-edge (saw-like); D Profile of chipped stone scraper; E Profile of chipped stone blade - unretouched; F Profile of chipped stone blade - unifacial retouch; G Profile of chipped stone blade - bifacial retouch

Three assemblages were examined from the Early Neolithic (Bożejewice, site 22/23; Łojewo, site 35; and Miechowice, site 7 – Czerniak 1994, Marciniak 2005a, 2005b). They contributed a total of 41 specimens for the analysis. This is 36% of the entire SEM sample and represents the largest group of specimens in the analysis.

The Middle Neolithic period is represented by a single site (Wegierce, site 12), with a very small sample of remains ($n=4$) (Czerniak 1992; Marciniak 2005a, 2005b). It contributed only 3% of the SEM sample and represents the smallest group of specimens in the analysis.

The Late Neolithic period is represented by a large group of sites ($n=5$). Two of the sites (Krusza Podłotowa, site 2 and Podgaj, site 7A) are considered to be ceremonial in nature (Koško and Kurzawa 1997; Marciniak 2008). The rest of the sites (Radojewice, site 29; Wilkostowo, site 23/24; and Żegotki, site 3) are typical settlements of the Funnel Beaker Culture (Koško 2000; Rzepecki 2004). In total, these sites contributed 26% ($n=30$) of the entire sample. This is the second largest group of specimens in the analysis. The distribution of remains by site was very uneven. Most of the remains come from Wilkostowo (57%; $n=17$). All of the remaining sites contributed far fewer remains (between 1 and 4 specimens).

The Early Bronze Age (= EBA henceforth) is represented by a single site (Bruszczewo, site 5) (Czebreszuk and Müller 2004), but with a relatively large sample of remains ($n=17$), representing 15% of the entire sample. It represents the third largest group of specimens in the analysis. This is a particularly important period since it is commonly accepted that bronze metallurgy was introduced for the first time. Unfortunately, well-contextualized zooarchaeological remains from this period are not curated in abundance in this region of central Poland. Hence, the inclusion of the chronologically-controlled sample from Bruszczewo, being one of the most important sites in the region, is essential for the analysis.

The Middle Bronze Age (= MBA henceforth) is represented by assemblages originating from five settlements of Lusatian culture (Ciechrz, site 2; Kierzkowo site 1; Kuczkowo, site 5; Siniarzewo, site 1; and Sławsko Wielkie, site 12 – Ignaczak 2004; Głogowski, Szmałek and Ignaczak 2004; Ignaczak, Szmałek and Głogowski 2004). However, they contributed only a small percentage of the sample (9%; $n=10$). It is tied with the Late Bronze Age sample for fourth place. The largest sample is from Kierzkowo (40% of the bones from this period). A very narrow range of relative frequency of remains was used from the other sites ($n=1-2$ specimens each). In general, few bones with slice marks were recovered at these sites.

The Late Bronze Age (= LBA henceforth) and the early Hallstatt period is represented by two fortified settlements from the region (Słupca and Smuszewo – Niesiołowska-Wędzka 1989). Both sites yielded similarly small amounts of remains (5-6%) representing a total of 11% of the total assemblage used in the analysis. It is tied with the MBA for fourth place.

Results

Frequency of raw material types through time (Tables 1 and 2)

In the Early Neolithic, all of the grooves in bones which were the result of slicing activities were made by chipped stone tools. There is no evidence for metal marks at all. This is clearly visible

in Bożejewice 22/23 (Fig. 4). In the Middle Neolithic, a similar situation exists. All of the grooves in bones were made by chipped stone tools. There is no evidence for metal marks at all during this period (Fig. 5). Similarly, all of the grooves in bones were made by chipped stone tools during the Late Neolithic (Fig. 6). There is no evidence for metal marks at all during this period. Until the advent of the EBA, no metal marks are found on bones.

During the EBA, for the first time, a small percentage of the grooves were made by metal tools (6%; $n=1$). The single metal groove is from the site of Bruszczewo (Fig. 7). All of the other grooves found on the other bones from this site are the result of chipped stone tools being used in the processing of animal remains (Fig. 8). In other words, the EBA animal carcass processing technology is dominated by chipped stone tools (94%).

In the MBA, the relative frequency of metal tool marks continued to increase. The frequency of metal tool marks dramatically increases from the EBA (6%) to the MBA (33%). Metal tool marks were found at each of the sites examined. The change in raw material is evident by a comparison of the grooves made by metal knives (Fig. 9) with those of stone flakes/blades (Fig. 10).

In the LBA, the frequency of metal marks further increases – to 92% (Fig. 11). Almost all of the samples were clearly made by sharp metal blades. However, one of the samples from the Halstatt C site of Smuszewo 1 displayed characteristics of a chipped stone tool. This is evident from the shape of the groove with its asymmetrical profile (Fig. 12a and b). During this period, stone tools almost, but not completely, disappear from the animal carcass processing technology. It is probably not until the Iron Age (or later) that they completely disappear.

Tool types through time

Throughout the Early and Middle Neolithic, all of the marks appeared to be made by unifacially produced and unretouched stone flakes or blades (Table 3). Experiments have determined that it is almost impossible to distinguish between the marks made by simple flake and unretouched unifacially produced blades (Fig. 6). In the Late Neolithic, almost all of the grooves were made by unretouched and unifacially produced flake/blades. In addition, a groove made by a chipped stone scraper is was found ($n=1$) (Fig. 12).

The situation changed in the Bronze Age. In the EBA, contrary to expectation, almost all of the chipped stone tool grooves were made by unifacially produced and unretouched stone flakes or blades ($n=29$; 91%) (Fig. 8). In the MBA, the proportion of metal tools increased; three were made by metal blades (27%) (Fig. 9). Of the eight stone tool incidences (73%), all were made by unifacially produced and unretouched stone flakes or blades (Fig. 10). In the LBA, almost all of the butchering-related grooves ($n=11$; 73%) were made by metal knife blades. One slicing groove was made by a stone tool flake (7%) (Fig. 12a and b). In addition, three bones from the LBA Lusatian culture were observed to also have been chopped with a metal axe (20%) (one sample from the Smuszewo 1 site; two samples from the Słupca 1 site) (Fig. 13). This is the first evidence for the use of metal axes in the butchering process.

Number of slices/bone through time

Theoretically, the number of slices on a bone should change with the shift from stone to metal tools. Metal tools are supposedly

Table 1: Frequency distribution of raw material of slicing tools making grooves on bones by period (NISP).

	<i>Raw material (light microscope) - revised</i>					
	<i>Data</i>		<i>%</i>		<i>Total Sum of NISP (only cultural marks)</i>	<i>Total %</i>
<i>Period</i>	<i>Metal</i>	<i>Stone</i>	<i>Metal</i>	<i>Stone</i>		
Early Neolithic		41	0.00%	100.00%	41	100.00%
Middle Neolithic		4	0.00%	100.00%	4	100.00%
Late Neolithic		29	0.00%	100.00%	29	100.00%
Early Bronze Age	1	15	6.25%	93.75%	16	100.00%
Middle Bronze Age	3	7	30.00%	70.00%	10	100.00%
Late Bronze Age	11	1	91.67%	8.33%	12	100.00%
Grand Total	15	97	13.39%	86.61%	112	100.00%

Table 2: Distribution of stone and metal tool grooves by site and period.

<i>Sum of NISP (only cultural marks)</i>		<i>Raw material (light microscope) - revised</i>		
<i>Period</i>	<i>Site</i>	<i>Metal</i>	<i>Stone</i>	<i>Grand Total</i>
Early Neolithic	Bozejewice, site 22/23		21	21
	Lojewo, site 35		9	9
	Miechowice, site 7		11	11
Early Neolithic Total			41	41
Middle Neolithic	Wegierce, site 12		4	4
Middle Neolithic Total			4	4
Late Neolithic	Krusza Podlotowa, site 2		6	6
	Podgaj, site 7A		1	1
	Radojewice, site 29		4	4
	Wilkostowo		16	16
	Zegotki, site 3		2	2
Late Neolithic Total			29	29
Early Bronze Age	Bruszczewo	1	15	16
Early Bronze Age Total		1	15	16
Middle Bronze Age	Ciechrz, site 2		1	1
	Kierzkowo, site 1	1	1	2
	Kuczkowo, site 5	1		1
	Siniarzewo, site 1		4	4
	Ślasko Wielkie, site 12	1	1	2
		3	7	10
Middle Bronze Age Total				
Late Bronze Age	Ślupca, site 1	6		6
	Smuszewo, site 1	5	1	6
Late Bronze Age Total		11	1	12
Grand Total		15	97	112



Fig. 4 SEM photograph of an inverse silicone mould coated in gold palladium (Poland Sample 47, photo c) from the Early Neolithic site of Bożejewice 22/23 showing a stone tool slice mark.

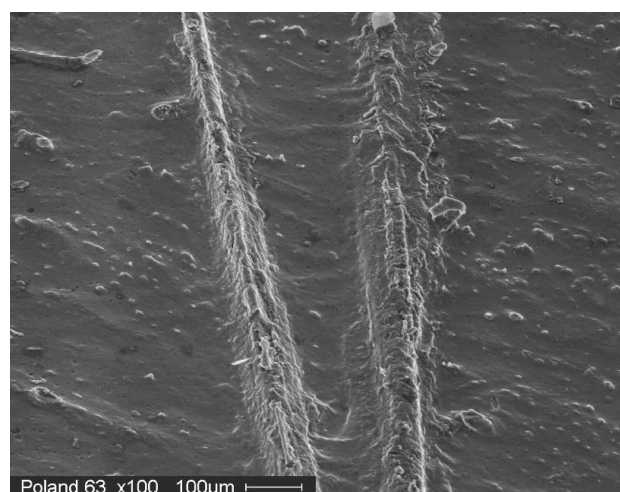


Fig. 7 SEM photograph of an inverse silicone mould coated in gold palladium (Poland Sample 63, photo f) from the Early Bronze Age site of Bruszczevo showing a metal tool slice mark.

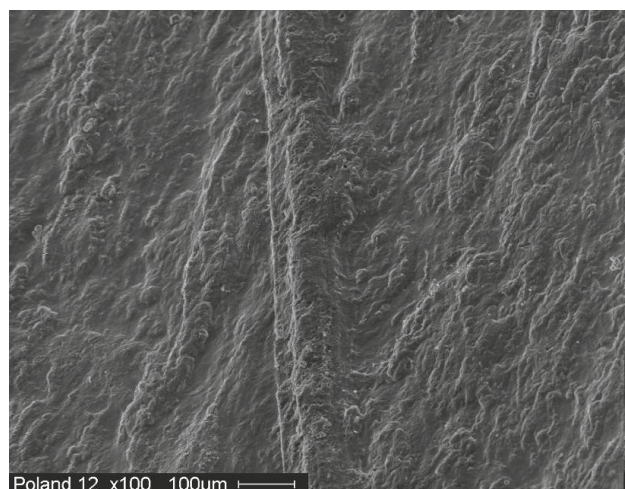


Fig. 5 SEM photograph of an inverse silicone mould coated in gold palladium (Poland Sample 12, photo d) from the Middle Neolithic site of Węgiecie 12 showing a stone tool slice mark.

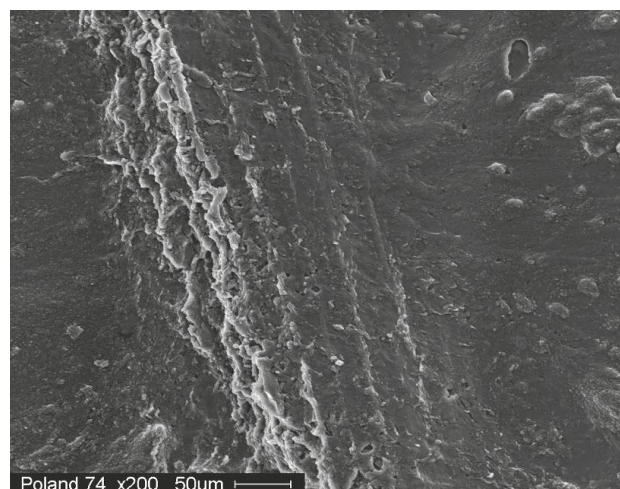


Fig. 8 SEM photograph of an inverse silicone mould coated in gold palladium (Poland Sample 74, photo f) from the Early Bronze Age site of Bruszczevo showing a stone tool slice mark.

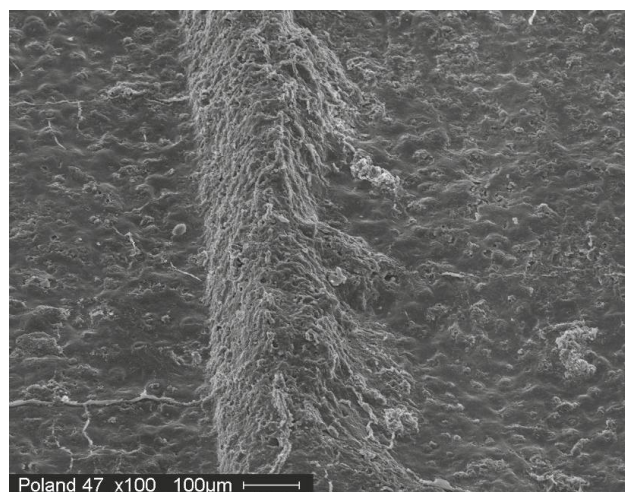


Fig. 6 SEM photograph of an inverse silicone mould coated in gold palladium (Poland Sample 17, photo f) from the Late Neolithic site of Krusza Podlotowa 2 showing a stone tool slice mark.

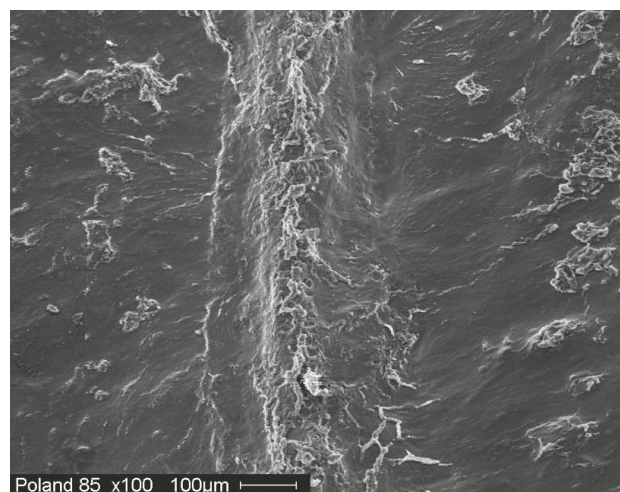


Fig. 9 SEM photograph of an inverse silicone mould coated in gold palladium (Poland Sample 94, photo c) from the Middle Bronze Age site of Kierzkowo 1 showing a metal tool slice mark.

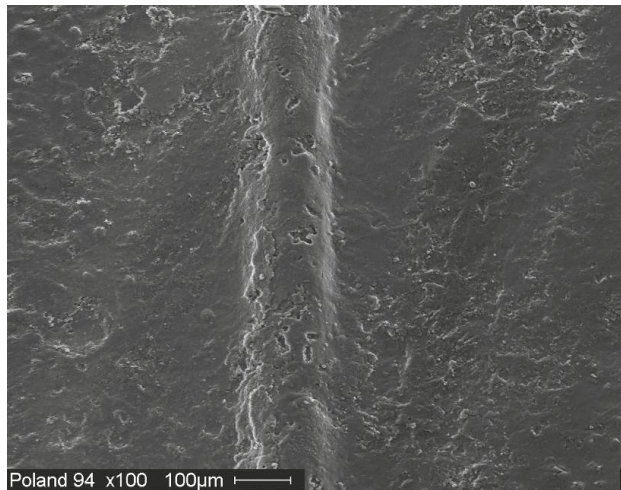


Fig. 10 SEM photograph of an inverse silicone mould coated in gold palladium (Poland Sample 85, photo c) from the Middle Bronze Age site of Siniarzewo 1 showing a stone tool slice mark.

more efficient allowing butchers to spend less time slicing away at various tough spots on the carcass.

The specimens from the Neolithic, in general, exhibit a wide range of slice marks per bone (anywhere between 1 and 14 slices) (Table 4). In the EBA, the range of variation for stone tools dramatically increases with up to 30 slices per bone.

This pattern changes with the introduction of metallurgy as the number of slices per bone declines. The single metal tool from the EBA had only 3 slices. This pattern continues in the MBA when there are far more slices per bone from stone (1-9 slices) than metal tools (1-4 slices). In the LBA, this pattern breaks down. Partially, it is a result of the fact that stone tool marks completely disappear; hence, there is no basis for comparison within the period. The range of metal tool mark slices in this period (1-12 per bone) is in the lower range exhibited by stone tools in previous periods. The analysis suggests that the number of slices per bone decreases with the transition from a stone- to metal-based technology probably due to the fact that metal tools are sharper and more effective in processing animal remains.

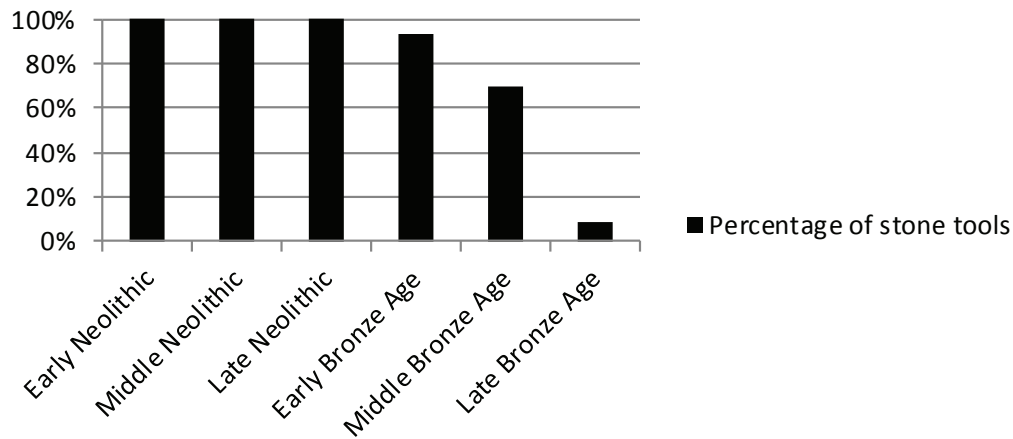


Fig. 11 Histogram of changing frequencies of stone tool cut marks over time.

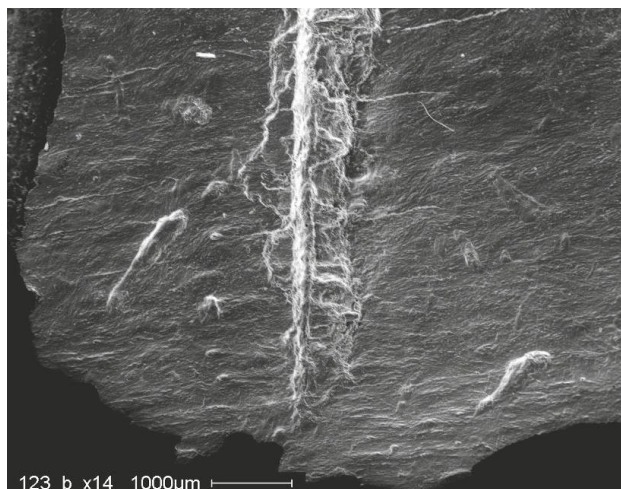


Fig. 12 SEM photograph of an inverse silicone mould coated in gold palladium from the Late Bronze Age (Hallstatt C) site of Smuszewo 1 showing a stone tool slice mark.

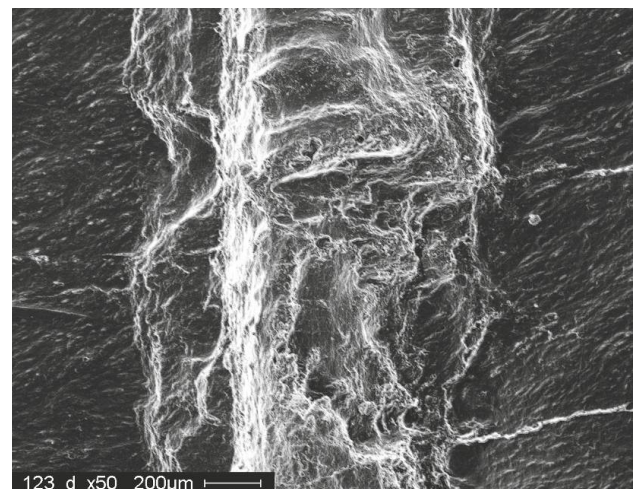


Fig. 13 SEM photograph of an inverse silicone mould coated in gold palladium from the Late Bronze Age (Hallstatt C) site of Stupca 1 showing a metal axe chop mark.

Table 3: Frequency distribution of tool types by raw material and period. *The number of incidences was calculated to ensure that all the types of marks on bones are included. This frequency value includes each cluster of marks on a bone. As a result, some bones are counted twice if there is more than one type of mark present.

		Tool type	Data								
		Axe		Blade		Flake/blade		Scraper		Total Sum of Number of incidences (only cultural marks)	Total %
Period	Raw material (light microscope) - revised	Sum of Number of incidences (only cultural marks)	%	Sum of Number of incidences (only cultural marks)	%	Sum of Number of incidences (only cultural marks)	%	Sum of Number of incidences (only cultural marks)	%		
Early Neolithic	Stone		0.00%		0.00%	41	100.00%		0.00%	41	100.00%
Early Neolithic Total			0.00%		0.00%	41	100.00%		0.00%	41	100.00%
Middle Neolithic	Stone		0.00%		0.00%	5	100.00%		0.00%	5	100.00%
Middle Neolithic Total			0.00%		0.00%	5	100.00%		0.00%	5	100.00%
Late Neolithic	Stone		0.00%		0.00%	30	96.77%	1	3.23%	31	100.00%
Late Neolithic Total			0.00%		0.00%	30	96.77%	1	3.23%	31	100.00%
Early Bronze Age	Metal		0.00%	2	100.00%		0.00%		0.00%	2	100.00%
	Stone		0.00%	1	3.33%	29	96.67%		0.00%	30	100.00%
Early Bronze Age Total			0.00%	3	9.38%	29	90.63%		0.00%	32	100.00%
Middle Bronze Age	Metal		0.00%	3	100.00%		0.00%		0.00%	3	100.00%
	Stone		0.00%		0.00%	8	100.00%		0.00%	8	100.00%
Middle Bronze Age Total			0.00%	3	27.27%	8	72.73%		0.00%	11	100.00%
Late Bronze Age	Metal	3	21.43%	11	78.57%		0.00%		0.00%	14	100.00%
	Stone		0.00%		0.00%	1	100.00%		0.00%	1	100.00%
Late Bronze Age Total		3	20.00%	11	73.33%	1	6.67%		0.00%	15	100.00%
Grand Total		3	2.22%	17	12.59%	114	84.44%	1	0.74%	135	100.00%

Table 4: Distribution frequency of number of slices/specimen (NISP).

		Raw material (light microscope) - revised	Data				
		Metal		Stone		Total Sum of NISP (only cultural marks)	Total %
Period	# slices/chops (grooves) by eye	Sum of NISP (only cultural marks)	%	Sum of NISP (only cultural marks)	%		
Early Neolithic	1	0	0.00%	11	100.00%	11	100.00%
	2	0	0.00%	9	100.00%	9	100.00%
	3	0	0.00%	3	100.00%	3	100.00%
	5	0	0.00%	4	100.00%	4	100.00%
	6	0	0.00%	5	100.00%	5	100.00%
	7	0	0.00%	1	100.00%	1	100.00%
	8	0	0.00%	1	100.00%	1	100.00%
	9	0	0.00%	3	100.00%	3	100.00%
	10	0	0.00%	3	100.00%	3	100.00%
	14	0	0.00%	1	100.00%	1	100.00%
Early Neolithic Total		0	0.00%	41	100.00%	41	100.00%
Middle Neolithic	1	0	0.00%	0	0.00%	0	0.00%

		<i>Raw material (light microscope) - revised</i>		<i>Data</i>			
		<i>Metal</i>		<i>Stone</i>		<i>Total Sum of NISP (only cultural marks)</i>	<i>Total %</i>
<i>Period</i>	<i># slices/chops (grooves) by eye</i>	<i>Sum of NISP (only cultural marks)</i>	<i>%</i>	<i>Sum of NISP (only cultural marks)</i>	<i>%</i>		
	3	0	0.00%	2	100.00%	2	100.00%
	5	0	0.00%	2	100.00%	2	100.00%
<i>Middle Neolithic Total</i>		<i>0</i>	<i>0.00%</i>	<i>4</i>	<i>100.00%</i>	<i>4</i>	<i>100.00%</i>
Late Neolithic	1	0	0.00%	6	100.00%	6	100.00%
	2	0	0.00%	3	100.00%	3	100.00%
	3	0	0.00%	4	100.00%	4	100.00%
	4	0	0.00%	1	100.00%	1	100.00%
	5	0	0.00%	3	100.00%	3	100.00%
	6	0	0.00%	2	100.00%	2	100.00%
	7	0	0.00%	3	100.00%	3	100.00%
	8	0	0.00%	2	100.00%	2	100.00%
	9	0	0.00%	3	100.00%	3	100.00%
	14	0	0.00%	1	100.00%	1	100.00%
<i>Late Neolithic Total</i>		<i>0</i>	<i>0.00%</i>	<i>28</i>	<i>100.00%</i>	<i>28</i>	<i>100.00%</i>
Early Bronze Age	1	0	0.00%	2	100.00%	2	100.00%
	2	0	0.00%	1	100.00%	1	100.00%
	3	1	33.33%	2	66.67%	3	100.00%
	4	0	0.00%	1	100.00%	1	100.00%
	5	0	0.00%	1	100.00%	1	100.00%
	6	0	0.00%	1	100.00%	1	100.00%
	7	0	0.00%	0	0.00%	0	0.00%
	8	0	0.00%	0	0.00%	0	0.00%
	10	0	0.00%	2	100.00%	2	100.00%
	12	0	0.00%	0	0.00%	0	0.00%
	16	0	0.00%	1	100.00%	1	100.00%
	20	0	0.00%	1	100.00%	1	100.00%
	24	0	0.00%	1	100.00%	1	100.00%
	30	0	0.00%	1	100.00%	1	100.00%
<i>Early Bronze Age Total</i>		<i>1</i>	<i>6.67%</i>	<i>14</i>	<i>93.33%</i>	<i>15</i>	<i>100.00%</i>
Middle Bronze Age	1	2	50.00%	2	50.00%	4	100.00%
	3	0	0.00%	1	100.00%	1	100.00%
	4	1	100.00%	0	0.00%	1	100.00%
	5	0	0.00%	2	100.00%	2	100.00%
	9	0	0.00%	1	100.00%	1	100.00%
	10	0	0.00%	1	100.00%	1	100.00%
<i>Middle Bronze Age Total</i>		<i>3</i>	<i>30.00%</i>	<i>7</i>	<i>70.00%</i>	<i>10</i>	<i>100.00%</i>
Late Bronze Age	1	1	50.00%	1	50.00%	2	100.00%
	2	4	100.00%	0	0.00%	4	100.00%
	3	1	100.00%	0	0.00%	1	100.00%
	4	1	100.00%	0	0.00%	1	100.00%
	7	1	100.00%	0	0.00%	1	100.00%
	8	1	100.00%	0	0.00%	1	100.00%
	10	1	100.00%	0	0.00%	1	100.00%
	12	1	100.00%	0	0.00%	1	100.00%
Late Bronze Age Total		11	91.67%	1	8.33%	12	100.00%
<i>Grand Total</i>		<i>15</i>	<i>13.64%</i>	<i>95</i>	<i>86.36%</i>	<i>110</i>	<i>100.00%</i>

Conclusion

Our analysis has demonstrated that the commonly held assumption that stone tools disappear with the advent of the Bronze Age and are immediately replaced in all of their functions is faulty. Clearly, stone tools for processing animal remains continue to be extensively employed through the MBA. It is only in the LBA that metal tools almost completely replace stone tools for processing animal remains. Hence, the proposal by Rosen (1997) concerning the rate of replacement of stone by metal tools is upheld in this case. Stone tools were only replaced by metal tools when metal technologies developed significantly enough to become more efficient, but at the same time inexpensive enough for them to be widely adopted. Otherwise, it was easier to keep on using stone tools.

Given these findings, it is just as important to collect and analyse chipped stone tool flakes, blades and scrapers from later prehistoric sites (see also e.g. Osipowicz 2009; Piličiauskas and Osipowicz 2010). Clearly, they were being used for more than plant processing. The most innocuous chipped stone tools (i.e. informal tools, e.g. flakes) were being used for most of the processing of animal remains. Yet, these are the very lithic types often ignored in analyses from Bronze Age settlements. A perusal of any Bronze Age site report will demonstrate that almost all of the analyses have focused on the formal tools. Yet, they may be the least likely ones to have been used in animal processing.

One of the most important observations to have come out of this study is that the widespread use of metal for animal carcass processing occurs much later in this region than elsewhere. In the Levant and northern Balkans, where similar studies have occurred, it is clear that this transition to a metal-dominated processing technology occurs early in the MBA (Greenfield 1999, 2000, 2008). In the Levant, the MBA begins c. 2100 BC. In the northern Balkans, it begins c. 1900 BC. In contrast, the MBA begins c. 1300 BC in the Polish lowlands. In the North European Plain, the transition to a metal-dominated animal processing technology only occurs even later, during the LBA and the early Hallstatt period (see Table 1 in Greenfield 2010; Bogucki 1992; Ehrich and Bankoff 1991; Mazar 1990; Yavor 1995). A similar study conducted in England demonstrated an even greater time lag for the adoption of metal tools for processing animal remains in England (Olsen 1988). There is a clear delay in the widespread adoption of such a metallurgical technology from south to north (and probably from south-east to north-west).

The changes in animal processing technology that have been identified in this chapter do not occur in isolation. They are part of the larger economic, political, ceramic and technological changes occurring in central Poland (and by extension, probably across central Europe). The disintegration of the large-scale Late Neolithic cultural distributions (e.g. Funnel Beaker, Global Amphora Culture, Bell Beaker phenomenon) and formation of smaller local cultures in the EBA, which begin to be integrated on a macro-regional scale (probably economic/metal and amber trade; and political) did not automatically lead to the adoption and widespread use of metallurgy. There were significant temporal delays in the adoption of this new technology as it had to develop harder and more efficient forms and become inexpensive enough for it to be widely adopted.

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TRAVELS, TRANSMISSIONS AND TRANSFORMATIONS – AND TEXTILES

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Abstract: This paper follows the path forged by Kristian Kristiansen in his scholarship on 'Travels, Transmissions and Transformations'. Specifically, this investigation into Bronze Age textiles, skins, tools and techniques from Denmark, which also incorporates the strontium isotope tracing system and textual evidence from the Mediterranean and Near East, adds the textile dimension to his impressive scholarly contribution. The various aspects of textiles highlight and demonstrate both similarities and differences in the archaeological record in the areas investigated. Even if it is not possible to make direct comparisons between southern and northern Europe in the Bronze Age, the various results clearly inspire and provide significant new insights into the production and consumption of textiles and the rise of Bronze Age societies.

Keywords: Textiles, skins, costume, textile production, textile tools, strontium isotope, textile terminology, textile economy, textile trade

Introduction

A textile is not simply a binary system of spun, twisted or spliced fibres, but first and foremost a result of a complex interaction of resources, technology and society. Textiles have enormous potential in archaeological research as they enable us to acquire knowledge of social and cultural aspects of ancient societies, and provide us with a unique opportunity to come very close to the prehistoric individual (Andersson Strand et. al. 2010).

Textiles are rare finds in archaeological contexts in Europe, but the oak coffin graves from Bronze Age Denmark with their well-preserved assemblages of personal belongings are a notable exception. They display a rich and varied range of garments and wool textiles (Broholm & Hald 1940; Hald 1980; Bender Jørgensen, Munksgaard & Nielsen 1982; Bender Jørgensen 1986, 1992; Nielsen 1989; Bergerbrant 2007, 2010). Thus, researchers of Bronze Age Europe turn to Denmark when they wish to understand how people of the past dressed and how they used textiles in life and death to manifest themselves.

In southern Europe, such textile remains are very rare and fragmentary. However, in contrast to northern Europe, there is an abundance of data on textile techniques, tools, transmission of knowledge, trade, and textual evidence from the Mediterranean region and the ancient Near East. Textiles and clothing are seen depicted on seals, statues, and frescoes; texts of all kinds contain details of textiles and textile production, from fibre to finished product. The study of these sources provides rich and original sets of data on the textile economy, techniques, terminology and production (Barber 1991, 1994; Breniquet 2008; Michel & Nosch 2010a; Nosch & Laffineur 2012), thereby providing a framework for understanding Bronze Age societies in northern Europe.

In one of his major works on Bronze Age society, Kristian Kristiansen primarily follows a comparative method in search of analogous data for interpreting the rich Scandinavian evidence (Kristiansen & Larsson 2005). In this paper, we demonstrate the potential of textile research and how textiles can supplement and further develop his ideas on travel, transmission and transformation in Bronze Age societies.

Bronze Age Scandinavia – and Textiles

Some of the most spectacular and well-preserved costumes

in Europe dating to the early Bronze Age (1700-1100 BC) in Denmark have been recovered in the oak coffin graves from Borum Eshøj in East Jutland, Egtved, Skrydstrup, Trindhøj, Guldhøj and Jels in Southern Jutland, and Muldbjerg in Western Jutland (Broholm & Hald 1940; Bender Jørgensen 1986; Bender Jørgensen 1992).

Clothing from oak coffins associated with women includes garments such as the tailored, body-fitting blouse, the string skirts, belts, sprang caps and hairnets. Less specific are large rectangular pieces of cloth that could be wrapped around the body to function as a skirt, dress or mantle (Fig. 1) (Broholm & Hald 1940). Some of these (Borum Eshøj C and Skrydstrup) were sewn together to form tubes similar to the later early Iron Age costumes (Mannering & Gleba forthcoming). Clothing from the oak coffins associated with men comprises garments like oval cloaks, wrap-around garments often made from the leftover corner pieces from cutting the oval cloaks, wrap-around kilts, belts and hats (Fig. 2) (Broholm & Hald 1940). The wrap-around kilt also has a parallel in a Danish early Iron Age bog find, albeit in a skin version (Hald 1980). It is characteristic that some of these garments were gender specific, while others were essentially unisex.

Both sexes wore one-piece leather shoes with tie strings, or textile shoes, or mittens (Broholm & Hald 1940; Hald 1972). The nicely folded textile foot-wraps, on the other hand, which were sometimes placed at the feet of the deceased in the oak coffin burials, are examples of costume items that have a symbolic rather than functional use as they were neither large enough to represent a sock nor do they seem to have been used as linings for shoes. While the function of some costumes, such as the female blouse, is easy to determine, the function and manner of wearing the large tubular outfits found in the Borum Eshøj and Skrydstrup burials is not straightforward. These costumes cannot have been worn as they were placed in the grave, and it is necessary to interpret how this enigmatic item might have been worn (Hald 1980:359-379; Hägg 1968; Mannering & Gleba forthcoming).

Kristian Kristiansen suggested nearly 40 years ago that these large textiles could have been worn in a flexible way, as a kind of overgarment that covered most of the body and the jewellery worn underneath it (Kristiansen 1974). This interpretation definitely appears plausible. There also seems to be continuity of Scandinavian costume from the Bronze Age into the early Iron Age regarding the use of the tubular costume items in the Huldremose



Fig. 1 Borum Eshøj C. Female costume. Photo: Roberto Fortuna.

II find from Djursland, Denmark and a similar garment from an unknown location in Denmark, which have now been ¹⁴C-dated to the Pre-Roman Iron Age (Mannering et. al. 2009).

A superficial glance at the textiles may give those unfamiliar with the subject, the impression that north European Bronze Age textiles were coarse and primitive (Bender Jørgensen 1986). However, the new analyses have highlighted properties and techniques which indicate that these costumes were perfectly and very intelligently adapted to the very specific demands of costume design of that time. The new analyses have also shown that many Bronze Age textiles were subjected to hard finishing treatments which were probably applied for both practical and aesthetic reasons. The finishing techniques provided the textiles with a uniform and firm surface which obscured the thread structure. A further functional advantage of this production method was that it allowed the fabrics to be cut into shapes without fraying and avoided the cut ends having to be secured by hemming. In this way, many Bronze Age textiles were technologically, aesthetically, and in terms of shape embedded into a costume tradition which had significant similarities with the skin costume technology (Broholm & Hald 1940; Hald 1980; Hägg 1986).

The Danish Bronze Age textiles demonstrate from their very first appearance a fully developed textile technology in contrast to



Fig. 2 Borum Eshøj B. Male costume. Photo: Roberto Fortuna.

their costume design, which was still to some extent influenced by the possibly much older skin craft (Mannering 2011). So, which tradition had the most impact on the Scandinavian early Bronze Age costume? Do the textiles represent an independent development from the late Stone Age or was the textile craft influenced by external factors? As there seem to be close connections between the crafts needed to produce early Bronze Age textiles and skins, it is likely a mixture of both, with local traditions influenced by know-how and new resources as well as raw materials coming from other areas. As the weaving technology is documented much earlier in central and southern Europe than in Scandinavia (Barber 1991), it is hoped that the renewed focus on Scandinavian Bronze Age costume and textile technology will shed new light on these intriguing questions.

Moreover, the clear connection between garments made from textiles and skins indicates that there must have been many more items made of skin that were not placed in the Danish burials. A Dutch bog find dated to the twelfth century BC, which contained a skin cape, a skin cap, a skin shoe, and the remains of a costume made in typical Bronze Age textile (Sanden & Stuyts 1996:124-126; Comis 2003:193-197) indicates that skin garments played an important role in the Bronze Age although they are not easily identified in the finds. Furthermore, the Dutch skin garments, which have close similarities with the Danish early Iron Age bog finds, demonstrate that there was a continuing skin craft tradition which has been previously overlooked (Mannering & Gleba forthcoming).

Another interesting dimension of the Danish Bronze Age textiles and costumes is that some of these garments, such as the string skirt and oval cloaks, have parallels in contemporary bronze figurines and rock carvings, which indicates that religion and everyday life

were interwoven into the costume design (Madsen 1981; Kjærøum & Olsen 1990). Indubitably, both male and female costumes played a significant role in Bronze Age cosmology and mythology (Almgren 1960; Goldhahn 2005). The presence of exact replicas and patterns of well-known textile costumes in the iconography cannot be a coincidence, nor is it of minor importance. With the focal point on textile and costume production, it will be vital in the coming years to identify intersections where different Bronze Age spheres meet and new meanings are created, and this is an area which at present is being further investigated.

Bronze Age Textile Tools and Technology

Visually, textiles could have very different designs. Comparing the coarse and brown Bronze Age northern European textiles from the oak coffins (e.g. Figs. 1-2) to the colourful costumes recorded in the iconography in southern Europe is at best an uneven task. Although the textiles have great regional variations, textile technology and production is more universal and the same types of tools and raw materials were used in both the Scandinavian and Mediterranean regions. It is therefore of highest importance to study and discuss the similarities and differences between those areas and thereby the transmission and transformation of the knowledge of textile production in the Bronze Age.

Textile production is a craft that needs meticulous planning before execution, and the craftspeople involved possessed many different skills and *a priori* know-how. The ability and knowledge to produce a textile from fibre procurement to finished textile would have been lodged within more than one person as several people would have been involved in the various production processes. The amount of raw material and time required for processing the fibres should not be underestimated. In northern and central Europe, the Mediterranean and the Near East the most common fibre materials were animal fibres from sheep and goats as well as plant fibres from flax, hemp and nettle (e.g. Broholm & Hald 1940; Bender Jørgensen 1986; Bender Jørgensen 1992; Barber 1991). Both analyses of textiles from Scandinavia and texts from the Near East demonstrate that fibres were processed in similar ways across regions and periods. The wool was plucked from the sheep and sorted into various fibre groups and then teased or combed before spinning. Flax and hemp were cultivated, while nettle was grown wild. After harvesting, the plant stalks had to be retted. The stems could then either be placed in water or spread on the ground. The next step was breaking, which was done with a wooden club or a similar tool, to crush the stems and allowed the various constituent parts to be separated from the fibres. Finally, the fibres had to be scutched with a broad wooden knife, scraping away the remnants of stem and bark and the fibres were then ready to be hackled or combed and processed further (e.g. Barber 1991).

Thereafter, the fibres could be spun into a yarn. Various spinning techniques and tools have been used since the Neolithic era (Barber 1991:51; Tiedemann & Jakes 2006:301). A spindle consists of a spindle rod, generally made of wood, and often also a spindle whorl. Various types of materials can be used to make spindle whorls, for example, fired clay, stone or bone and they can change in shape and size (e.g. Barber 1991:52-68; Carington Smith 1992:675-686; Völling 2008; Rahmstorf 2008). However, in general in Bronze Age Scandinavia spindle whorls are rare in the archaeological record, and it is plausible that yarn was spun using only a spindle rod (fig. 3). Spindle whorls are known from central Europe and the Mediterranean area, but in some regions and Bronze Age periods the numbers of whorls are also low (Andersson Strand & Nosch forthcoming). Therefore, it is possible



Fig. 3 Spinning on a spindle rod. Drawing: Annika Jeppsson.

that a spindle rod (without a whorl) was also used in these areas as the primary spinning tool.

Spinning tests have shown that spinning a thin thread requires a light spindle while spinning a thicker thread requires a heavier spindle. Spinning is highly time-consuming and experiments clearly demonstrate that it takes a longer time to spin a thinner thread than a thicker one (Andersson Strand et. al. 2008; Olofsson, Andersson Strand & Nosch forthcoming). A skilled spinner can spin on average 35 metres of yarn per hour with a 4 g whorl, while a spinner spinning a thicker thread with an 18 g spindle can spin 50 metres per hour. The given spinning time did not include fibre preparation or winding up the yarn from the spindle when it was full. Furthermore, to produce a single m² of cloth, with ten threads per cm in warp and weft, one would need to spin 2000 m which would have taken a spinner 40 hours to produce (Olofsson, Andersson Strand & Nosch forthcoming). The question of whether or not it is possible to estimate ancient textile craftspeople's working capacity or compare the time it takes craftspeople today with the time it would have taken in the past is subject to debate. However, these calculations clearly demonstrate that textile production is a time-consuming activity/process. Finally, it should also be noted that using a spindle without a whorl and thereby another spinning technique is even more time-consuming (Tiedemann & Jakes 2006).

Fabric is created by weaving together two thread systems. The warp system constitutes the threads fixed on the loom, running parallel to the sides of the loom. The warp is kept stretched by loom weights during weaving. The weft system is inserted at right angles to the warp and runs alternately over and under the warp threads. Depending on the weaves, e.g. tabby and twill,

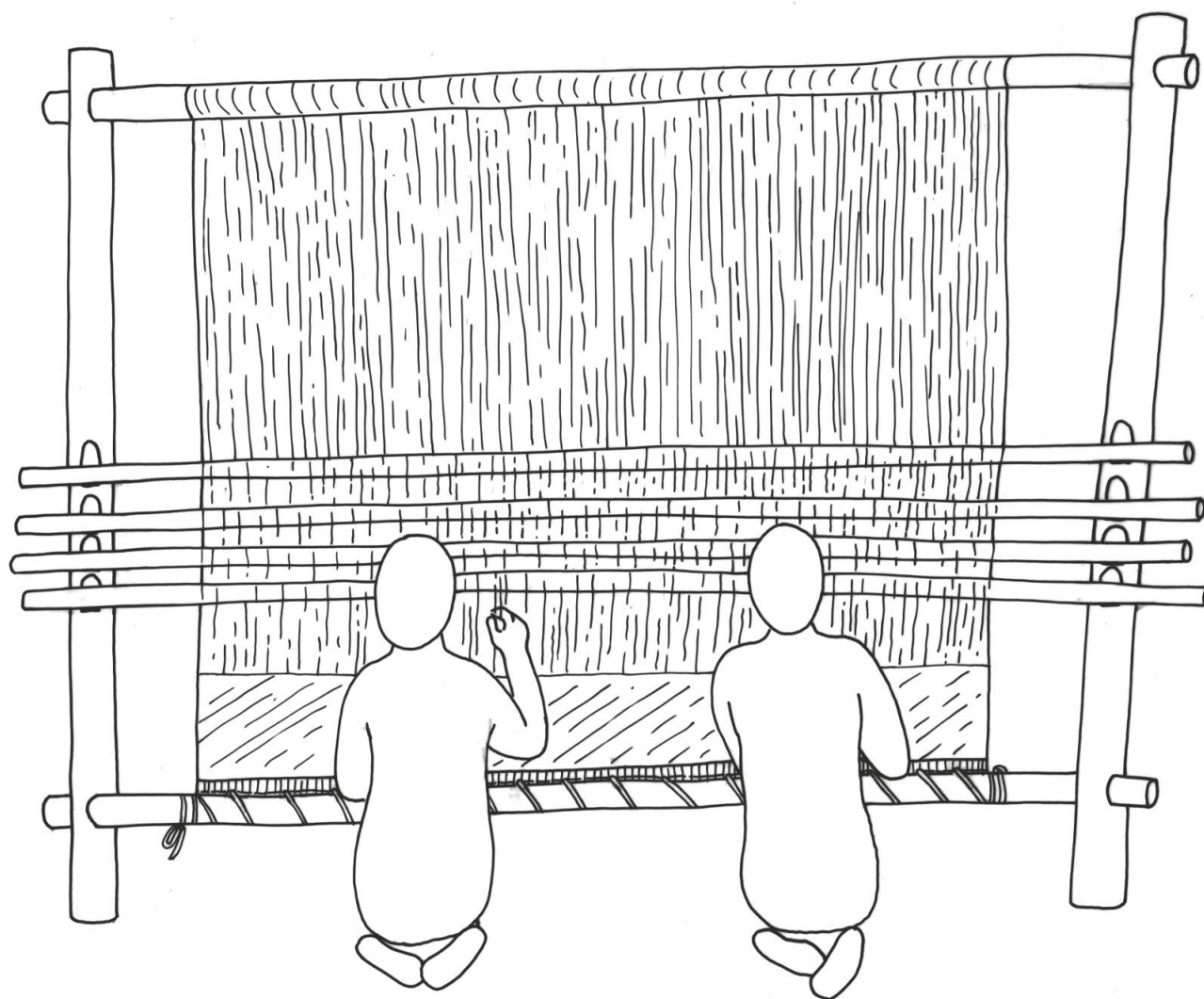


Fig. 4 Weaving on a two-beam loom. Drawing: Annika Jeppsson.

different patterns can be created. Several types of loom, such as the horizontal ground loom and the vertical two-beamed loom, were used in ancient times (Fig. 4). However, the archaeologically best-attested loom is the warp-weighted loom as loom weights are frequently found on excavated sites in many regions and chronological periods. It is important to note that most types of loom can be used to produce similar fabrics. Moreover, even if textile tools are sparse or absent in the archaeological record, textile production cannot be excluded, as the textiles from the Scandinavian Bronze Age coffins amply demonstrate.

A textile is not just fibres and threads. A textile is the result of the needs, desires and choices of society, which in turn influences the exploitation of resources and development of technology. Conversely, the availability of resources and the state of technology condition the choices of society. The totality of these interactions is expressed in textile production. It is therefore important to investigate and discuss textile and textile production not merely via tools and textiles, but also through the physical, cultural, economic, social and gendered landscape (Andersson Strand et al. 2010). Textile production and how it affected Bronze Age societies has not been the main focus of Kristian Kristiansen's previous work. However, in Kristiansen's new research, where transmissions and transformations are the focal points, the multi-

faceted topic of textile production will undoubtedly provide valuable fresh perspectives.

Tracing Bronze Age Textiles

The phenomenon of travel, transmission and trade in the field of textiles and fibre material has often been investigated through comparative studies (e.g. Barber 1991). Kristian Kristiansen has made valuable contributions to this field providing us with insights into the significance of textiles during the Bronze Age (e.g. Kristiansen & Larsson 2005). New technologies and new methodologies in textile research now hold the promise of generating even further perspectives. One of these novel methodologies deals with the important aspect of provenance. This transdisciplinary investigative method can produce promising results when applied, for instance, to Kristian Kristiansen's previous work.

Tracing the origin of Bronze Age textile fibre material is possible by geochemical analysis using the strontium isotope system. Theoretical and analytical tools from the Earth Sciences are combined with archaeological material culture and research on ancient textiles to achieve this goal (Frei et al. 2009).

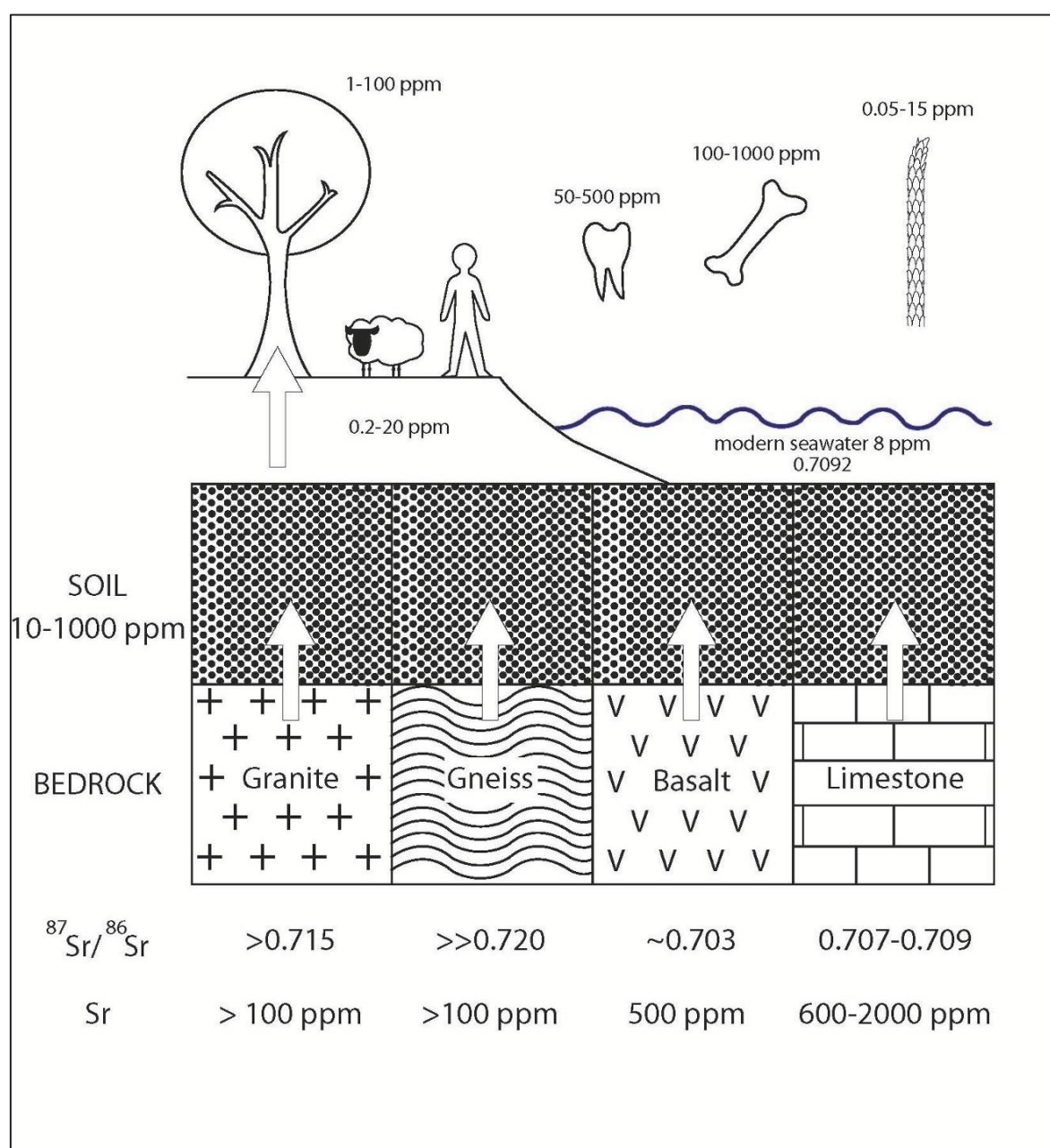


Fig. 5 Diagram illustrating the path of strontium from the geological strata to the human/animal hair. (Frei, K.M., PhD thesis 2010, and references therein).

Within archaeology, strontium (Sr) isotopes serve as geochemical signatures which can be applied to source a prehistoric skeleton to a particular geological area, and thereby to a geographical locality (Ericson 1985; Price et. al. 2001). The reason why this methodology proves ideal for migration studies is that strontium isotopic signatures are conveyed from eroding geological material through soils and food chains into the human/animal skeleton without undergoing any changes. Within the skeleton, strontium substitutes for calcium within the mineral lattices. The strontium isotopic tracer system relies on the use of two of the four naturally occurring isotopes, namely ^{87}Sr and ^{86}Sr , and particularly on the variations of their ratio $^{87}\text{Sr}/^{86}\text{Sr}$. This ratio is related to the natural abundance of these two isotopes and thereby often referred to in the literature as numbers in the order of ~ 0.7 ($\sim 7\%$ $^{87}\text{Sr}/\sim 10\%$ ^{86}Sr) (Faure 1986). The variations of the $^{87}\text{Sr}/^{86}\text{Sr}$ ratio are mostly

dependent on the age and type of geological material (i.e. rock, soil or mineral). Thus geographical variation in strontium isotopes is primarily controlled by the underlying geology, thereby creating a suitable tracing system for human and animal mobility and in turn contributing to our knowledge of transmission, trade and travel during prehistory (Ericson 1985; Frei 2010; Price et. al. 2001) (Fig. 5).

Prehistoric textiles, as earlier mentioned, are primarily made from one of two types of natural fibres: animal and plant fibres. Animal fibres are composed of proteins and plant fibres are made of cellulose. Both types of fibre can be investigated by this recently developed geochemical methodology to gather information on the origin of the raw material (Frei, et. al. 2009).

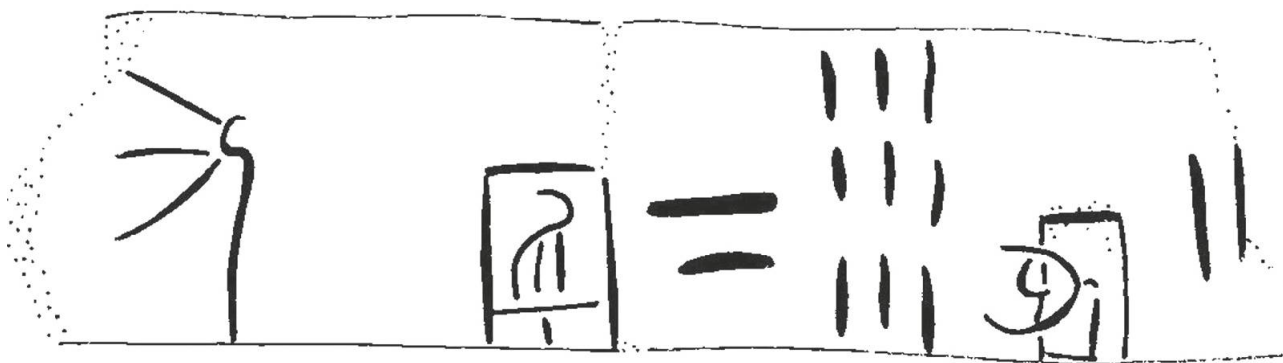


Fig. 6 Linear B tablet L(4) 515 from Late Bronze Age Knossos. It is written by scribe 208 and counts 26 textiles of the type PU (pu-ka-ta-ri-ja) and at least 2 textiles of the type KU.

The first Bronze Age textiles that have been studied applying this new methodology are the textiles from the Lusehøj burial mound near Voldtofte on the Danish island of Funen. The Lusehøj burial find includes two textiles as well as a skin, all of which were unearthed in 1861-62. A plant fibre textile was wrapped around the cremated human remains placed within a bronze urn, while a wool textile and an animal skin were wrapped around the entire assemblage of grave goods (Thrane 1984). The typological features of the bronze urn indicate a provenance in eastern central Europe. The bronze urn and the other impressive grave goods make this find one of the richest late Bronze Age graves in Denmark (Jensen 2006; Thrane 1984). The find is typologically dated to the Scandinavian Late Bronze Age Period V (900-700 BC).

The unique possibility of investigating three types of organic material (plant, wool, and fur) all deriving from the same burial context provides a perfect opportunity to investigate not only the provenance of each textile or fur, but also textile networks related to textile production, exchange and trade.

The results of the strontium isotope analyses of the two textiles and the skin demonstrate that none of these originate in Denmark (the island of Bornholm excluded) (Bergfjord et al. 2012; Frei & Mannering forthcoming). In other words, the animals had not grazed in present day Denmark nor had the plants grown there. Furthermore, a surprising result of the strontium isotope analysis of the three different types of organic material is that they all come from geologically different areas. Thus, in the world of textiles, travel, transmission, and trade are also the first words that come to mind. This pilot study reveals that textiles must have been a commodity that was part of a larger trading network during the Scandinavian Bronze Age. When strontium isotope analysis is applied to a larger assemblage of textiles and skins in the coming years, we expect that it will provide new and unexpected perspectives on the transmission and trade of raw materials and textiles in Bronze Age societies.

Transmissions, Trades and Textile Terminologies

Evidence for textiles in the Bronze Age Mediterranean and ancient Near East indicates that they comprised plant and animal fibres, e.g. hemp, nettle, flax, sheep and goat wool, and are as such the consequence of cultivation, domestication and selective breeding. Wool acquired the status of being the primary fibre material in the Early Bronze Age (third millennium BC) and by the second

millennium had been fully integrated into the economy of society. This is evident from the fact that textiles were a commodity in long distance trade (Veenhof 1972; Michel 2001; Michel & Veenhof 2010), and from here textiles were formalised as a payment method and distributed to workers as rations (Waetzoldt 1972). The diversity of textiles types, trades and techniques is strongly reflected in the rich and varied textual evidence, including textile-related terminologies, found within the scripts and languages of the Bronze Age Aegean and ancient Near East (Michel & Nosch 2010a; Michel & Nosch 2010b).

The Indo-European languages distinguish between braiding or plaiting, and weaving (Barber 2001: 7; Del Frio, Nosch & Rougemont 2010) and share common textile terms for wool. The development of sheep husbandry and its socio-economic consequences have led to third-millennium Mesopotamia being considered the 'homeland of wool' (Breniquet 2006b, 2006a, 2008, 2010). From the third millennium onwards, cuneiform inscriptions document men, women and children working in large textile manufactories. The large-scale workshops produced fabrics and clothing on an unprecedented level, and the phenomenon spread to the Aegean in the second millennium. In Mesopotamian institutions and Aegean palaces, scribes recorded standardized production targets for wool yields and for textile production. Thousands of specialised textile workers, primarily women and children, were monitored and supported by the central authorities (Nosch 2003, 2011).

At the beginning of the second millennium, international textile trade increased and consolidated in Anatolia (Veenhof 1972; Michel 2001; Michel & Veenhof 2010). The Kanish Kültepe correspondence, combined with studies of Anatolian geography, allows us to follow the trajectories of traders, caravans, wool and textiles (Barjamovic 2011; Wisti Lassen forthcoming). In these networks, textiles were produced and traded by household members in less centralised structures and were to a large extent based on private enterprise. Wool played an important role in the trade networks during the Bronze Age in the Aegean and Near East, and served to finance international trade in other goods. These textile transmissions modified both the physical and the political landscape, and thus trade and network, in the entire eastern Mediterranean (Michel & Nosch 2010a).

Thus, wool and textiles functioned as currency in pre-monetary economies. The historical perspective from the ancient Near East and Aegean in the Bronze Age illuminates how wool and

textiles integrated and transformed into political and religious institutions, and how these institutions set up control mechanisms and standardized quality systems (Waetzoldt 1972; Nosch 2011). The written sources shed light on the various ways in which production was organised and monitored (Michel 2001; Nosch 2003, 2011). They also demonstrate how textile trade, techniques and products generated textile terminologies and we can assume that similar developments took place in any textile-producing society (Michel & Nosch 2010b). This can provide a framework for the understanding of North European Bronze Age societies and the impact of raw materials and textiles on the development of a society.

Concluding Remarks

Textile research in Europe represents a transdisciplinary and international domain. As demonstrated above, in the last decade new analytical methods have been developed within textile research. This has provided excellent opportunities for combining archaeological and textual evidence with research on textile technology and production, enabling discussions of cultural, social, religious and economic aspects of Bronze Age society. However, comparing textiles and textile production in northern and southern Europe also demands a clear source critical methodology and a profound knowledge of the areas and materials under investigation. Nevertheless, the insights and information provided by textile research are invaluable, especially when discussing travels, transmissions and transformations.

We congratulate Kristian Kristiansen on his birthday and wish him well on his research projects. We are pleased to contribute with our expertise on textiles to his research on Bronze Age culture and look forward to many stimulating discussions in the years to come.

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PETROGRAPHIC, LA-ICP-MS AND XRD ANALYSES OF HALLSTATT CERAMICS FROM A SCYTHIAN AGE SETTLEMENT IN NORTH HUNGARY

Attila Kreiter, Szabolcs Czifra, Éva Széles, Mária Tóth and Orsolya Viktorik

Abstract: The Danube River has been a cultural dividing line within the Carpathian Basin for millennia. The eastern Hallstatt culture (750–400 BC) lived in the western part of Transdanubia during the Early Iron Age. Different communities lived east of the Danube, in the Great Hungarian Plain, in Subcarpathia and in Transylvania. These different social units in the three geographical regions (Great Hungarian Plain, Subcarpathia, Transylvania) had strong social relationships with the steppean Scythians. Iron Age societies of the Great Hungarian Plain (archaeologically termed the Vekerzug or Alföld group dating from the last third of the seventh century to the fourth century BC) appear to be involved in complex systems of exchange networks that had an affect on local traditions. One of the intriguing features of social relationships is the appearance of Hallstatt-type pottery in Vekerzug settlements. The aim of this paper is to examine the technology and composition of Hallstatt ceramics from a Vekerzug group settlement at Nagytarcsa–Urasági dűlő in north Hungary. Through petrographic, LA-ICP-MS and XRD analyses the possible technological similarities and differences between Hallstatt and local ceramics are assessed and the question of whether Hallstatt vessels were made locally or imported is considered. Possible correlations between manufacturing practices, raw materials, tempers and vessel types are also examined. A total of 44 samples were selected for petrographic analysis, from which 4 Hallstatt vessels and 4 Vekerzug vessels were also submitted for LA-ICP-MS and XRD analyses. LA-ICP-MS was applied to assess the compositional characteristics of the vessels, while XRD analysis was carried out in order to refine possible similarities between Hallstatt and local wares in terms of firing temperature. High gloss ceramic surfaces, reminiscent of graphite burnishing, are characteristic of the Hallstatt tradition and this is also observed on both Hallstatt and Vekerzug vessels. These were also examined by XRD. The results suggest that some of the Hallstatt vessels were indeed imported, but locally made Hallstatt-type wares were also identified.

Keywords: Vekerzug, Hallstatt, ceramic, technology, petrography, XRD, LA-ICP-MS

Archaeological background

On the basis of archaeological evidence to date, the relationship of the Great Hungarian Plain with areas influenced by the Scythians dates back to the second half of the seventh century BC (Kemenczei 2003:179; 2009:111–113). According to written and linguistic sources and archaeological research some Hungarian researchers traditionally consider the Carpathian Basin to have been part of the Scythian culture (630–400 BC) zone (Fig. 1) and overemphasize the migration of Scythian tribes to the Carpathian Basin (Fettich 1931; Párducz 1965, 1973). In opposition to large-scale migration, a different view emerged suggesting continuity from the Late Bronze Age (Table 1), when small communities from the steppe intermingled with local communities (Melyukova 1955; Vulpe 1970; Artamonov 1974; Dušek 1974; Kemenczei 2007; 2009). This view suggests that the social elite who possessed Scythian-type artefacts mixed with Late Bronze Age communities and this process resulted in the emergence of the Vekerzug group in the second half of the seventh century BC. It was suggested that the leaders of the Vekerzug communities in the Great Hungarian Plain were most probably of Iranian origin, but were not Scythians (Harmatta 1966:111). According to Herodotus (IV. 49; V. 9–10) the Sigynnae lived in the Great Hungarian Plain, while the Agathyrsi (650–400 BC) settled in Transylvania. It was suggested that the population of the Vekerzug group led nomadic lives. Since no extensive settlements have been found this interpretation was tempting and could be neatly correlated with ancient written sources about nomadic Scythians on the steppe (see the summary of Chochorowski 1985:148). However, recent large-scale excavations have revealed that the Iron Age population of the Vekerzug group mainly lived in open hamlets, which were scattered within a large area. The settlements

are always situated along water courses on elevated areas. The buildings were rectangular and semi-subterranean with beam structures and upright standing walls (Czifra 2006).

The site and the ceramic material

Nagytarcsa is situated in northern Hungary on the Pest alluvial fan on an area formed by valley ridges (Marosi & Somogyi 1990). The surface of the area has formed by the Danube since the beginning of the Pleistocene (~2.4 million years ago). At that time it flew through the Visegrád narrow, which was situated between the Börzsöny and Visegrád Mountains (Borsy 1989). For this reason the detritus of these mountains, and that of the Danube in general, was deposited in the area. Today the area is shaped by the Szilas Stream. Upper Pannonian (~8.9–2.4 million years ago) sediments are also present on and below the surface. At that time the Pannonian Lake was filled by alluviums deposited by rivers, which flowed into the lake from the north-west and north-east.

The Early Iron Age settlement at Nagytarcsa is situated on an elevated area along a water flow (Fig. 2). This terrace was generally dry in each season and was thus suitable for long-term occupation. The excavated settlement has a scattered structure, consisting of semi-subterranean houses and pits. This type of settlement is characteristic of the Scythian period; its analogies can both be found in the Carpathian Basin and east of it, in the forested steppe belt (Czifra 2006). The ceramics from the site belong to the main vessel types of the Vekerzug group (Fig. 3A–B) (Botyán 1955:13; Chochorowski 1985:31), such as large biconical vessels, cups with high swinging handle, bowls with inverted rims and squat-shaped (barrel-shaped) vessels. Apart from the squat-shaped vessels all vessel types show handmade and wheeled versions.

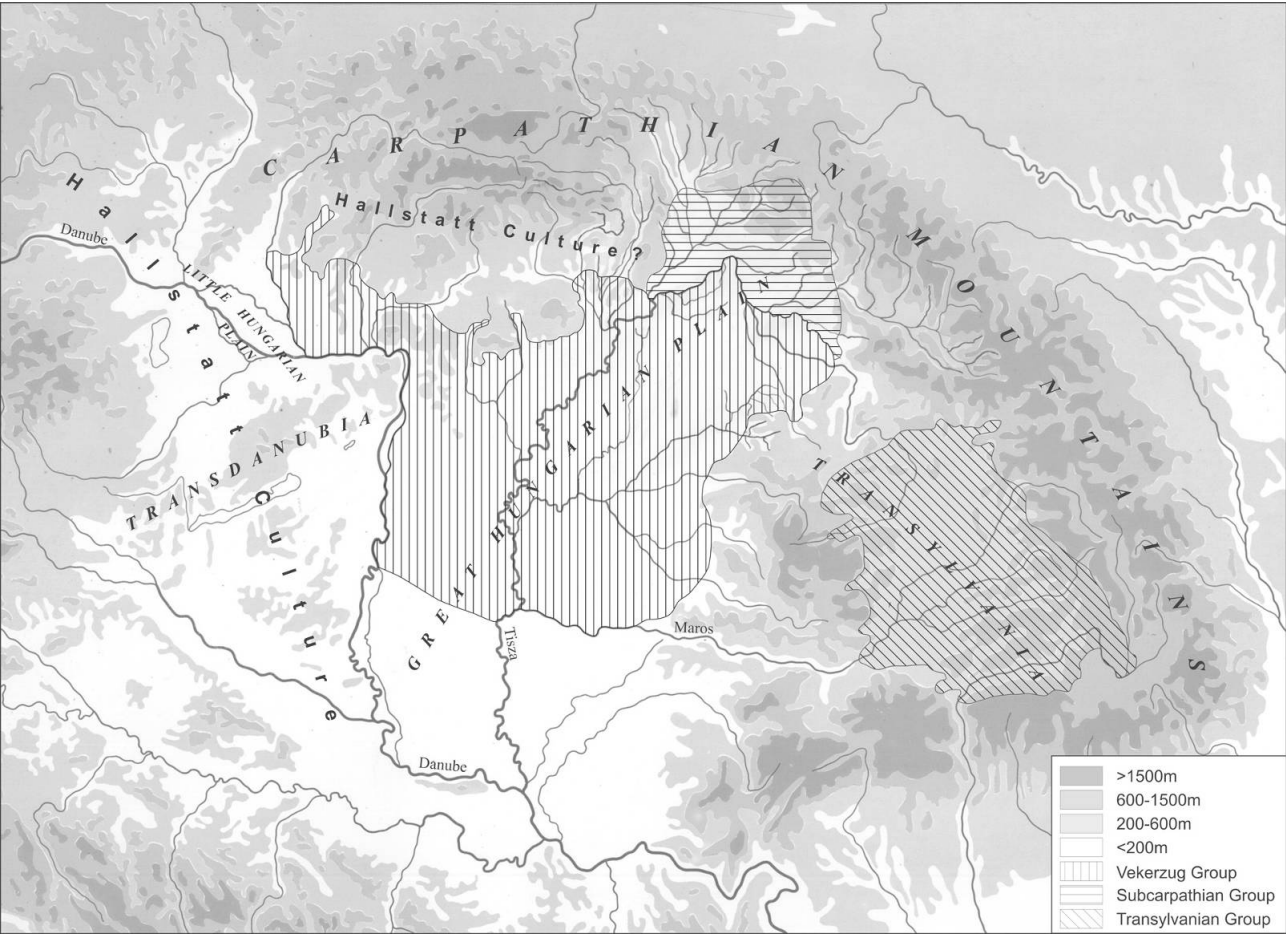


Fig. 1. The cultures of the Carpathian Basin in the Iron Age (after Párducz 1973: Karte 5; Miroššayová 1999; Kemenczei 2001a: 4. kép).

Tab.1. Chronology of the Iron Age in the Carpathian Basin after Patek 1993, Abb. 34; Kemenczei 2001b:190; Trachsel 2004, Abb. 195.

Absolute dates (BC)	Middle Tisza region	Upper Tisza region	Transylvania	Transdanubia	Relative chronology
800 700 600 500 400	G á v a c u l t u r e			Urnfield culture	Ha B3
	Mezőcsát culture	Late Gáva culture	Basarabi culture	Eastern variant of Hallstatt culture	Ha C1
	Alföld or Vekerzug group	Subcarpathian or Kushtanovice group	Transylvanian or Ciumbrud group		Ha C2
					Ha D1
					Ha D2-3
					LT A
	↓	La T é n e c u l t u r e			↓
Late Bronze Age			Scythian Age		

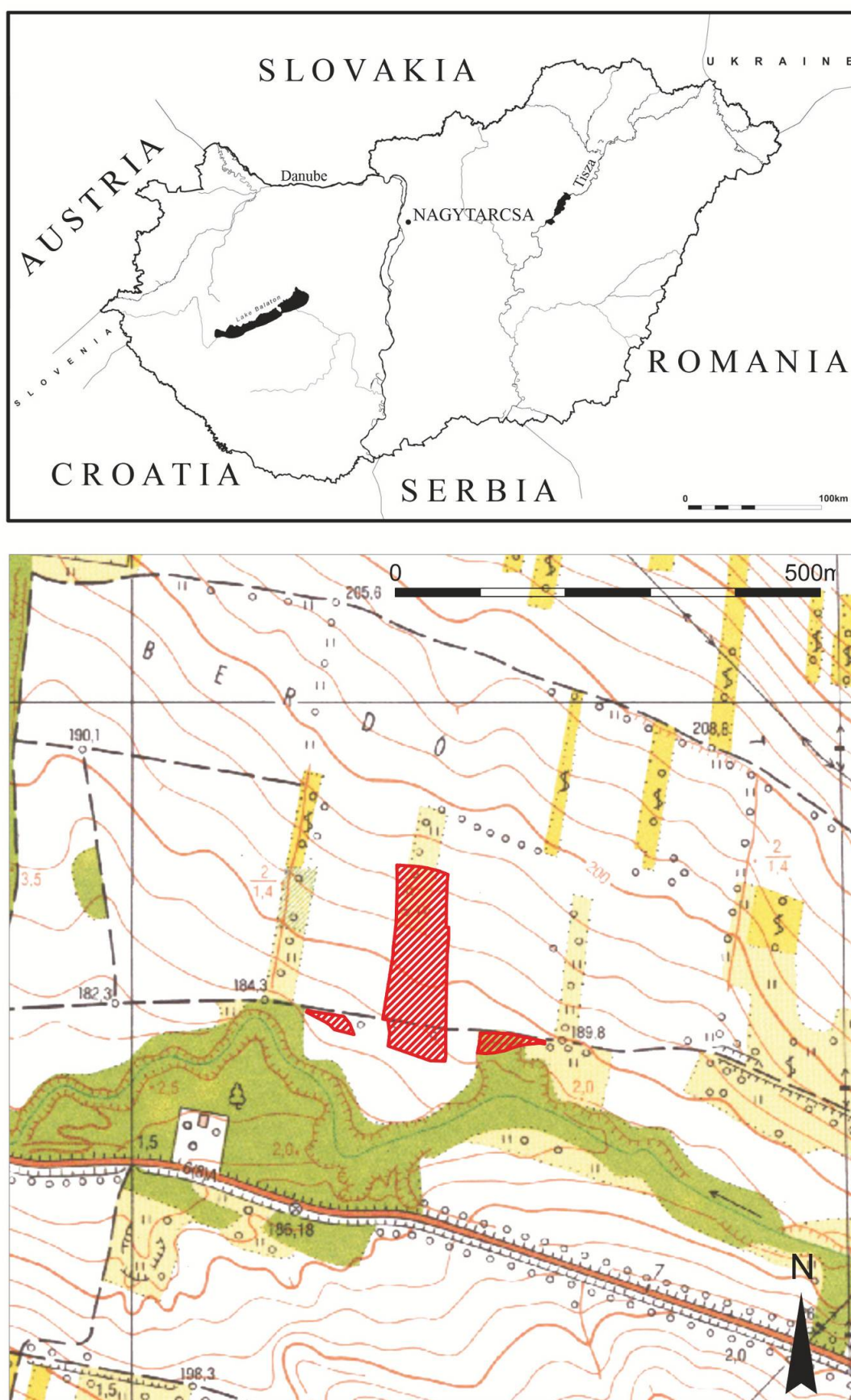


Fig. 2. Geographical position of Nagytarcsa after the Single National Projection map at the scale of 1:10 000, sheet: 65-244).

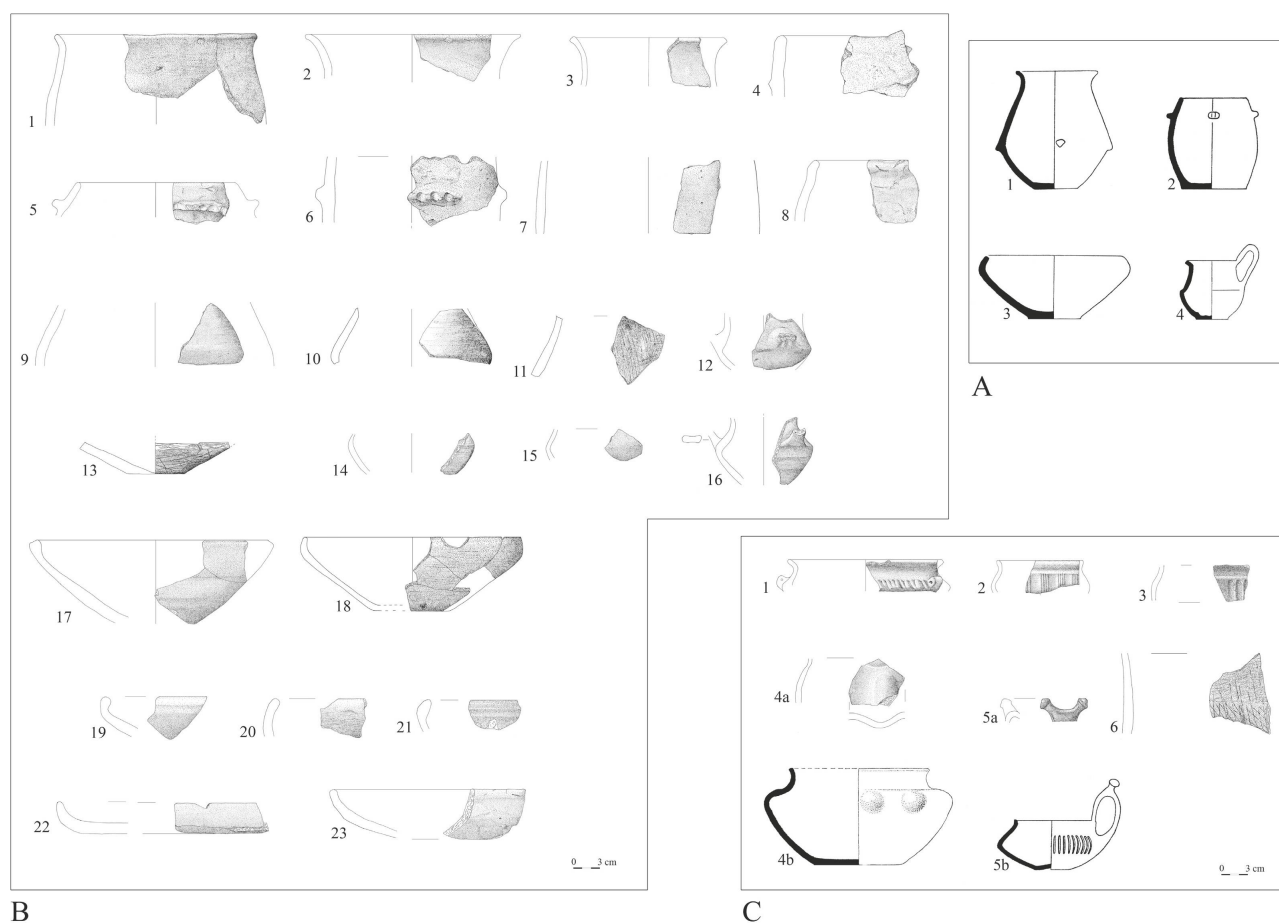


Fig. 3. Vekerzug and Hallstatt vessels in the assemblage. 3A: main vessel types of the Vekerzug group (not to scale). 3B: selection of Vekerzug type vessels from Nagytarcsa: B1: Sample 23-24; B2: Sample 3, B3: Sample 42, B4: Sample 16, B5: Sample 11, B6: Sample 43, B7: Sample 19, B8: Sample 18, B9: Sample 20, B10: Sample 1, B11: Sample 8, B12: Sample 44, B13: Sample 9, B14: Sample 39, B15: Sample 28, B16: Sample 18, B17: Sample 7, B18: Sample 22, B19: Sample 34, B20: Sample 37, B21: Sample 2, B22: Sample 10, B23: Sample 14. 3C: Hallstatt type vessels at Nagytarcsa. 4b is a reconstructed form of fragment 4a; 5b is a reconstructed form of fragment 5a. C1: Sample 41, C2: Sample 25, C3: Sample 4, C4a: Sample 13, C5a: Sample 27, C6: Sample 38 (microphoto: Attila Kreiter).

Researchers agree that the basic forms of vessels are rooted in Late Bronze Age pottery traditions and a continuous homogenisation in form can be recognized towards the Iron Age (Dušek 1966:27; Chochorowski 1985:32-51). The squat-shaped vessels also appear in Vekerzug and Hallstatt settlements (Gál & Molnár 2004:179). The appearance of the Late Bronze Age ceramic tradition in the Iron Age material culture indicates extensive social relationships between the communities (Kemenczei 2000:47).

Another important feature is that the potter's wheel was introduced into the Carpathian Basin from the Greek settlements of the Black Sea coast, mediated through the forested steppe zone by the Scythians around 600 BC (Romsauer 1991:365-366; Chochorowski 1998:483; Smirnova 1999:47; Kemenczei 2009:12). The ceramic material of the Nagytarcsa settlement can typologically be dated to the end of Ha D period and the analysis of the Hallstatt-type pottery also suggests this period for relative dating. These archaeological data correlate well with the calibrated radiocarbon dates from the site, which concentrate around 2475 $\pm$ 30 BP.

Hallstatt vessels in the assemblage

There are several vessels in the assemblage that are considered to be imported (Fig. 3C). A parallel for these vessels is found in Hallstatt settlements, especially in Transdanubia, such as the black, high gloss burnished (graphite?) bowls (Sample 4; Fig. 3C: 3) and cups (Sample 25; Fig. 3C: 2) that can be dated to the end of Ha D (Jerem 1981:Abb. 15, 8; Patek 1984:Taf. 19:11). Amongst the Hallstatt ceramics a cup (Sample 27; Fig. 3C: 5a-5b) with horn decoration is significant. These cups have everted rims, are decorated with vertical channelling, their shoulders break sharply and generally their bottoms are omphalic. The origin of the cup with the horns probably lies in the south-eastern Alpien Hallstatt area in the Ha C2-D1 period (Table 1), and is based on Urnfield traditions. This cup appears in the Celtic ceramic repertoire until 300 BC (see the summary by Tankó 2005). The bowls with embossed decoration (Sample 13; Fig. 3C: 4a-b) mainly concentrate in the Hallstatt settlements along the Danube (Kóny-T. Németh 1996:370, Abb. 3:2; Nyergesújfalu- MRT 5 1979:270, 39. kép; Patek 1984:Abb. 17:1; Lábatlan- MRT 5 1979:22. kép 20) and are dated to the Ha D period (Kemenczei 1977:78; T. Németh 1996:368). These bowls also appear in Slavonia (northern Croatia) (Kovačević 2008:65, Sl. 11), Slovenia (Dular 1982:71-72,

143–144, Sl. 27, T. 24:226–232; Dular & Križ 2004:T. 12, 5) and in Moravia (eastern part of Bohemia) (Bucsány/Bučany, Bujna & Romsauer 1983:Taf. IV:19, Taf. VIII:15).

A high gloss that is reminiscent of graphite burnishing appears on some of the vessels, but is not present in the ceramic tradition of the Vekerzug group. On Hallstatt ceramics, however, graphite burnishing and painting is one of the most characteristic practices, which developed in the Late Bronze Age Urnfield period (Frey 1969:73–77; Patek 1982:164–166, 67; von Carnap-Bornheim 1998:594–595). The graphite trade must be accounted for in the Ha C–D periods in Transdanubia (Patek 1984:68), similar to that in the La Tène period (Szöllösi et al. 2009:391; Kreiter et al. 2013) which was indicated by graphite fragments found at sites (Gróh 1984:61, 6. kép 13–15; Gáti 2009:66, 4. ábra 12–13).

Sample selection and results of petrographic analysis

An initial study of the ceramic assemblage from the site was carried out by a hand specimen (10x power), based on the distinguishing criteria of vessel type, shape, building techniques, surface treatments, colours, decoration, firing conditions and fabric. Groups were formed according to fabrics in order to investigate the relationship between the different aspects of the pottery assemblages, for example, whether a specific fabric appeared in a number of wares. From the macroscopic examination of the whole assemblage 44 samples were selected for petrographic analysis, which represent the most common vessel types such as jars (Samples 1: Fig. 3B.10; 8: Fig. 3B.11; 9; 20: Fig. 3B.9), bowls (Samples 2: Fig. 3B.21; 4: Fig. 3C.3a; 5; 6; 7: Fig. 3B.17; 10: Fig. 3B.22; 13: Fig. 3C.4a; 14: Fig. 3B.23; 21; 22: Fig. 3B.18; 34: Fig. 3B.19; 36; 37: Fig. 3B.20; 40; 41: Fig. 3C.1), cups (Samples 25: Fig. 3C.2; 27: Fig. 3C.5a), mugs (Samples 18: Fig. 3B.16; 26; 28: Fig. 3B.15; 44: Fig. 3B.12; 39: Fig. 3B.14), biconical pots (Samples 3: Fig. 3B.2; 12; 23–24: Fig. 3B.1; 29; 30; 31; 32; 33; 35; 38: Fig. 3C.6; 42: Fig. 3B.3) and squat-shaped pots (Samples 11: Fig. 3B.5; 15: Fig. 3B.8; 16: Fig. 3B.4; 17; 19: Fig. 3B.7; 43: Fig. 3B.6). Of these, three bowls (Samples 4: Fig. 3C.3; 13: Fig. 3B.4a; 41: Fig. 3C.1), two cups (Samples 25: Fig. 3C.2; 27: Fig. 3C.5a) and one biconical pot (Sample 38, Fig. 3C.6) are considered to be Hallstatt vessels.

During the macroscopic description and the petrographic analysis the inclusion density, size categories, inclusion sorting and roundness of the components were determined based on a slightly modified version of the directives of the *Prehistoric Ceramic Research Group* (PCRG 1997). Inclusion density: rare (1–2 %), sparse (3–10 %), moderate (10–20 %), common (20–30 %), very common (30–40 %) and abundant (40–50 %). Size classification: very fine (< 0.1 mm), fine (0.1–0.25 mm), medium (0.25–1 mm), coarse (1–3 mm) and very coarse (> 3 mm). Inclusion sorting: poorly-sorted, moderately-sorted, well-sorted and very well-sorted.

Petrographic analysis

Thin section analysis was applied to examine the similarities and differences between raw materials, fabric preparations and tempering practices. By means of petrographic analysis five fabric groups could be distinguished according to their most characteristic non-plastic inclusions.

Fabric 1 (Fig. 4) is found in jars (1, 9), bowls (2, 4, 6, 7, 34, 41), cups (25, 27), mugs (18, 28, 39, 44) and biconical amphorae (12, 35). The main characteristic of this group is that the vessels were

not tempered; the very fine (< 0.1 mm) raw materials probably occurred naturally. The exteriors of a bowl (4) and a cup (27) show high gloss burnishing (graphite?). These vessels are Hallstatt types. Petrographic analysis, however, revealed that these vessels have non-plastic inclusions similar to other vessels in this group in terms of size, roundness and amount. The main non-plastic inclusion of the vessels is monocrystalline quartz and rare amounts of muscovite mica.

Fabric 2 (Fig. 5.1) can be divided into subgroups. Fabric 2a is represented by a Hallstatt bowl (13) and a cup (25) and Fabric 2b consists of a Vekerzug mug (26). In general Fabric 2 is characterized by a fine (0.1–0.25 mm), mainly monocrystalline, quartz inclusion. Thus the vessels in this fabric show slightly larger inclusions than the previous fabric. The raw materials of the vessels were probably tempered with sand. The bowl and the cup in Fabric 2a are Hallstatt vessels and within a traditional typological approach they are considered to be imported; their composition is very similar petrographically. They also show similarities to a Vekerzug mug (26) in terms of the type and size of inclusions. It must be noted that the two Hallstatt vessels are more similar to each other petrographically than to the mug since the grain size distribution of the Hallstatt vessels is more even.

Fabric 3 (Figs. 5.2–6) can be divided into subgroups, which are similar in terms of grain size, thus the general appearance of sherds is similar regarding coarseness. Fabric 3a is found in a bowl with an inverted rim (5) and pots (15, 19, 29, 32, 33). The vessels were tempered with rock fragments with different size ranges (fine to coarse: 0.1–3 mm) or with sand, which contained the rock fragments. That is, this fabric is characteristically distinct from the previous ones. The quantity of volcanic inclusions in the ceramics, mainly plagioclase and andesite, is considerable compared with previous fabrics. The bowl with an inverted rim (5) is also distinct from the previous samples in that the rock fragments are more transformed and sparse amounts of yellow, angular, cryptocrystalline (opal?) grains are also present. It must be noted that such grains, although only rarely, are also present in two pots (29, 32) in this fabric and in a pot (16) and a bowl (22) in Fabric 4. One of the Vekerzug pots (19) also contains pumice fragments, but no andesite fragments. Rocks containing pumice, closest to the archaeological site, appear at the southern edge of the Visegrád Mountains, in the outer rim of the Börzsöny Mountains and in the outcrops of the Gyulakeszi Rhyolite Tuff Formation. Since sediments deposited in a wide geographical area around the site and could contain the debris of the abovementioned mountains the vessels in Fabric 3a are considered to be locally made.

Fabric 3b includes a Hallstatt type biconical pot (38) with a high gloss burnished (graphite?) exterior that is characterized by augite (clynopiroxene) bearing pyroxene andesite, which does not appear in other ceramics from the settlement in either fabric groups. Pyroxene andesite, closest to the site, appears mainly in the central caldera of the Börzsöny Mountain and in Poľana caldera (Slovakia), although it also appears in the Visegrád Mountains. Since the andesite fragments are rounded and subrounded it is possible that they were part of the sediment, which was deposited by the River Danube and from the direction of Poľana by the Garam River. In Fabric 3a several pots (15, 29, 32, 33) contain re-crystallized effusive andesite, which are different from the ones observed in the biconical pot (38) in Fabric 3b. In the light of this Sample 38 is considered to be imported.

Fabric 4 (Fig. 6.1–4) is represented by biconical pots (3, 23–24),

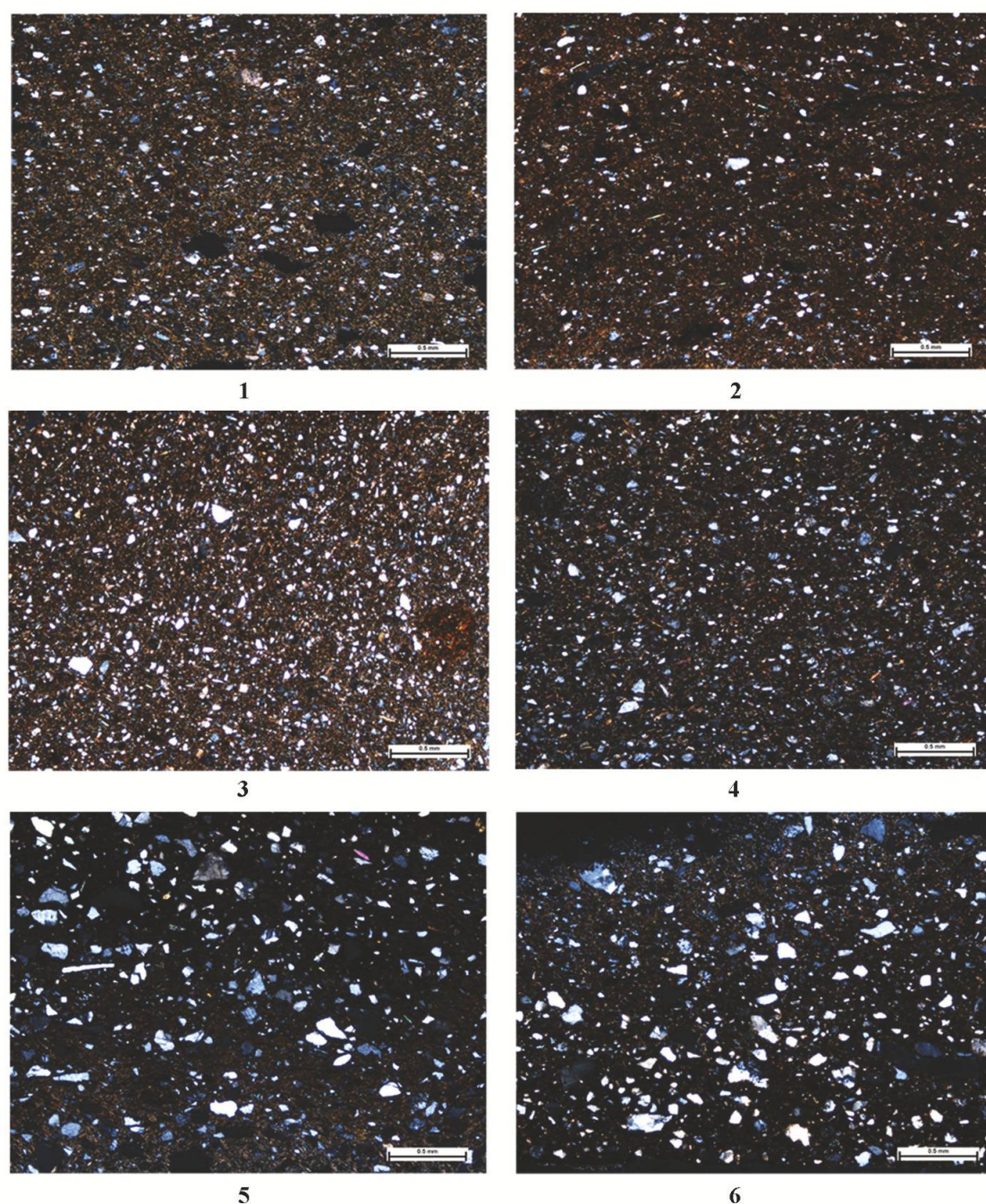


Fig. 4. Very fine-grained vessels in Fabric 1: 4.1: Sample 2-bowl, 4.2: Sample 4-bowl, 4.3: Sample 27-cup, 4.4: Sample 28-mug; Fine-grained vessels in Fabric 2: 4.5. Sample 13-bowl, 4.6. Sample 25-cup. All microphotographs are +N (microphoto: Attila Kreiter).

a biconical jar (8), bowls (10, 14, 20, 21, 22, 36) and squat-shaped pots (11, 16, 17, 30, 31, 40, 43). On the exterior of a biconical pot (3) and a biconical jar (8), high gloss burnishing (graphite?) is also present. The vessels were tempered with different size ranges of sand (fine to medium: 0.1–1 m) although different from Fabric 3 in that the size of non-plastic inclusions are smaller and less volcanic fragments are present than in Fabric 3 and calcareous grains also appear. Two pots (17, 40) and a bowl (21) were also tempered with grog.

Fabric 5 (Fig. 6.5–6) is found in a high gloss burnished (graphite?) bowl (37) and a biconical pot (42). The ceramics were made from

a ‘clean’ raw material, which contained sparse amounts of mainly very fine non-plastic inclusions.

LA-ICP-MS, solution based ICP-MS and XRD analyses

The petrographic analysis was supplemented by Laser Ablation Inductively Coupled Plasma Mass Spectrometric (LA-ICP-MS) analysis in order to compare the main and trace element composition of Hallstatt and Vekerzug products. In considering the results of petrographic analysis eight samples were selected for LA-ICP-MS. The following Vekerzug vessels were examined: a high gloss burnished (graphite?) biconical jar (8), a biconical pot (35), a high gloss burnished (graphite?) bowl (37) and a squat-

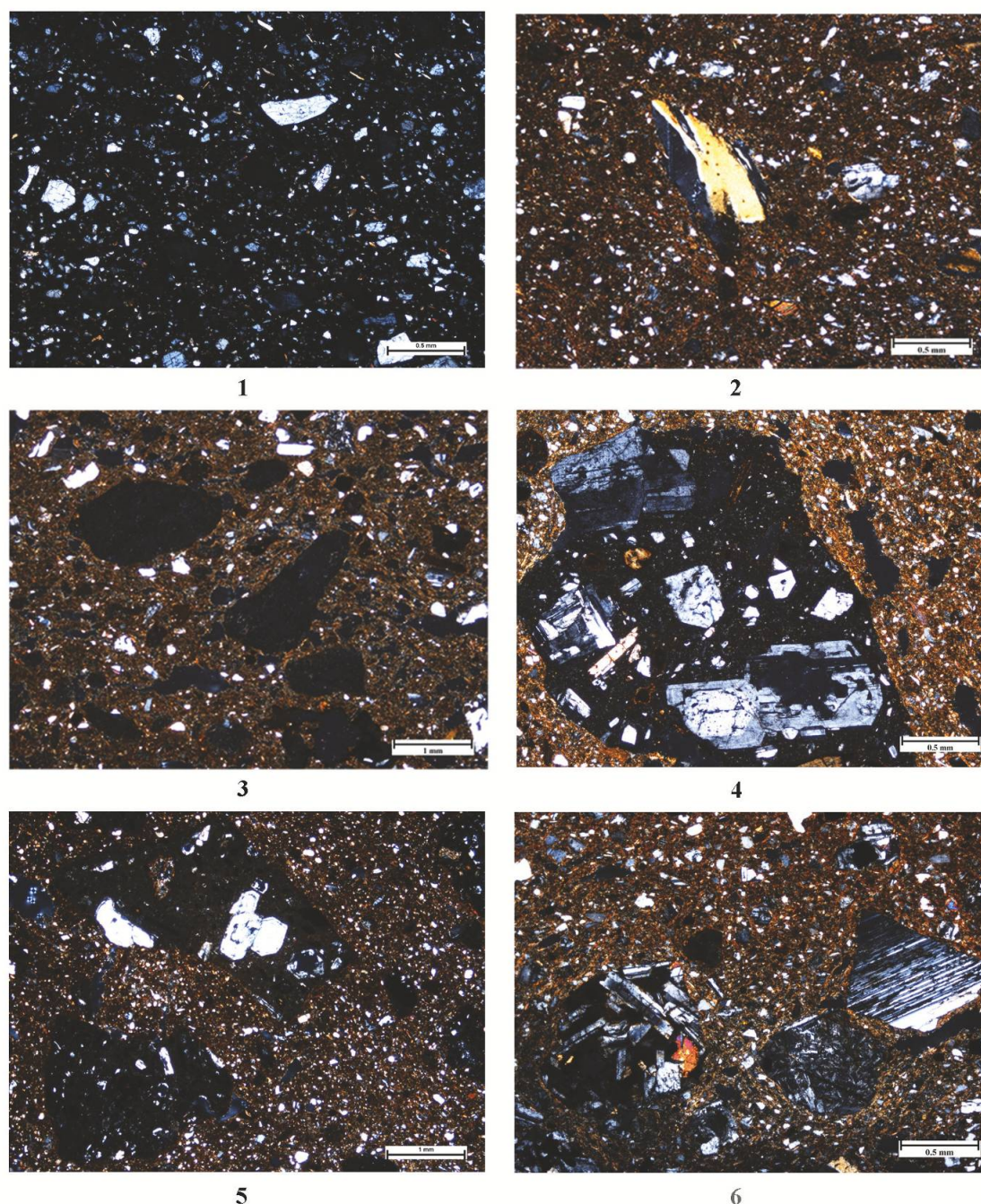


Fig. 5. Fine-grained vessels in Fabric 2: 5.1. Sample 26-mug; Medium to coarse-grained vessels in Fabric 3: 5.2: Sample 5-bowl, 5.3: Sample 19-pot, 5.4: Sample 29-pot, 5.5: Sample 32-pot, 5.6: Sample 38-pot. All microphotographs are +N (microphoto: Attila Kreiter).

shaped pot (43), which were compared with the following Hallstatt vessels: a high gloss burnished (graphite?) cup (27), a high gloss burnished (graphite?) bowl (41), a high gloss burnished (graphite?) biconical pot (38) and a bowl with embossed decoration (13).

The LA-ICP-MS analysis was carried out at the Hungarian Academy of Sciences Centre for Energy Research on a Thermo Electron Corp., Finnigan, Element2 (Bremen, Germany) type ICP-MS system equipped with a UP 213 A/F type (New Wave Inc., Fremont, USA) laser ablation sample introduction system. The LA-ICP-MS technique is a quasi non-destructive analysis because only a few nanogrammes of the sample are enough for analysis.

Aside from this advantage, sample preparation is not necessary for the analysis; samples can be measured directly.

During the analysis the ablated material was transported by argon as a carrier gas into the plasma. For the measurements a line scan was used applying a very low scan speed ($50 \mu\text{m s}^{-1}$) in order to improve the resolution of the elemental distribution. Other laser ablation parameters were: repetition rate: 10 Hz, laser beam diameter: $95 \mu\text{m}$, laser beam energy: 70% (0.244 mJ). For the laser ablation ICP-MS measurements a medium resolution ($R = 4000$) was employed, optimisation and mass calibration of the instrument were performed daily by the analysis of NIST 612 glass reference material (NIST, Gaithersburg, USA). Figure 7a-e

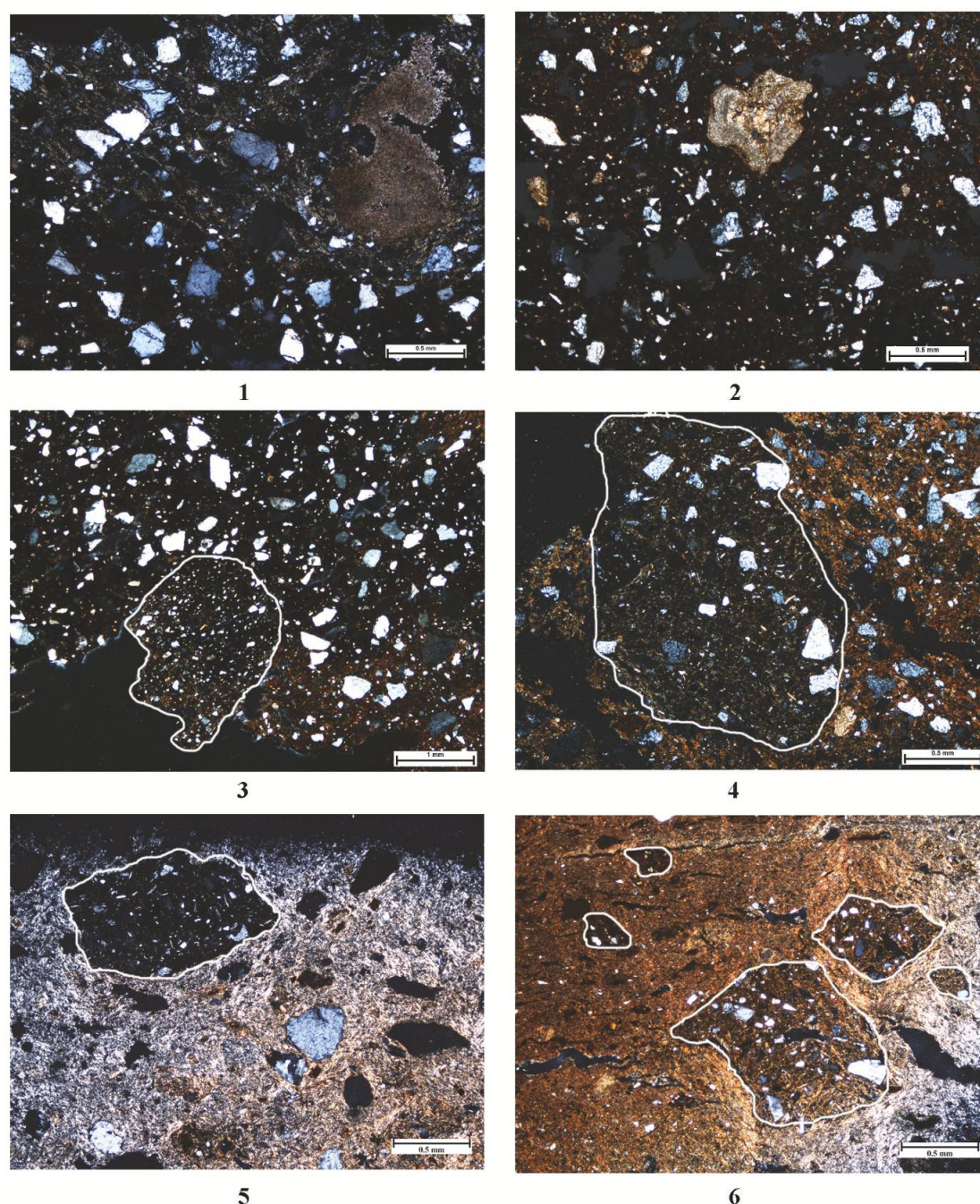


Fig. 6 Fine to medium-grained vessels in Fabric 4: 6.1: Sample 8-jar, 6.2: Sample 22-bowl, 6.3: Sample 17-pot with grog temper, 6.4: Sample 40-pot with grog temper. Very fine-grained vessels with 'clean' raw material in Fabric 5: 6.5: Sample 37-bowl with grog temper, 6.6: Sample 42-pot with grog temper. All microphotographs are +N (microphoto: Attila Kreiter).

shows the comparison of the element profiles in the case of the main components of the samples.

Samples were also analysed from digested solutions using ICP-MS technique. Solution based (destructive) elemental analysis is generally more precise than the laser ablation technique because of the more precise calibration methods (possibility for matrix matching and homogeneity of the samples). The samples were digested in a distilled concentric nitric acid and hafnium mixture using a microwave digestion system (MARS5, CEM Corp., USA), diluted with de-ionized water (Milli-Q System, Millipore, USA) and measured by an ICP-MS system. The optimized operating

parameters and data acquisition parameters of the instrument are summarized in Table 2.

The results of ICP-MS measurements are shown in the different parts of Figure 7. The correlation of the elements is shown on Fig. 7a. According to these results and the ones obtained from digested solutions (Fig. 7b–c) three compositional groups could be distinguished. The first group is represented by a Hallstatt bowl with embossed decoration (Sample 13) and also by a Hallstatt high gloss burnished (graphite?) biconical pot (Sample 38). The second compositional group is represented by a Vekerzug high gloss burnished (graphite?) biconical jar (Sample 8), a Hallstatt high gloss burnished (graphite?) cup (Sample 27), a Vekerzug

Table 2. Instrument parameters of LA-ICP-MS analysis

RF power (W)	1340
Cooling gas flow rate (l min ⁻¹)	15.4
Auxiliary gas flow rate (l min ⁻¹)	1.01
Nebulizer gas flow rate (l min ⁻¹)	0.965
Sample introduction (micromict nebulizer, scott chamber)	
Solution uptake rate (µl min ⁻¹)	100
Data collection	
Resolution	300, 4000
Runs and passes	5 x 5
Mass window (%)	5
Samples per peak	200
Search window (%)	60
Integration window (%)	5
Integration type	Average
Scan type	E-Scan

high gloss burnished (graphite?) bowl (Sample 37) and a Vekerzug squat-shaped pot (Sample 43). The third group contains a Vekerzug pot (Sample 35) and a Hallstatt high gloss burnished (graphite?) bowl (Sample 41). The compositions of the Vekerzug vessels show extensive similarities with some of the Hallstatt vessels in the second and third groups, while the Hallstatt samples in the first group are clearly separated. Figures 7d and 7e show the results of element profiles in a logarithmic scale representing the normalized values of the elements for each sample. The intensities gained by LA-ICP-MS analyses from hard samples and digested solutions are normalized to Si. The element profiles show an almost uniform value suggesting a similar provenance and similar raw materials of the Hallstatt and Vekerzug ceramics.

In order to assess the possible relationship between Hallstatt and Vekerzug products in terms of their technology the firing temperature of the samples was also analysed. The X-ray powder diffraction analysis (XRD) was carried out at the Hungarian Academy of Sciences Institute for Geological and Geochemical Research on a Philips PW1710 type X-ray diffractometer with the following instrument parameters: Cu K α radiation, graphite monochromator, 45kV tension, 35 mA intensity, 1° divergence gap. XRD analysis shows that firing temperatures of Hallstatt and Vekerzug wares were similar. The firing temperatures of Vekerzug wares: high gloss burnished (graphite?) biconical jar (8) and pot (35): < 800 °C; bowl (37): 800–900 °C; a squat-shaped pot (43): < 650 °C. The firing temperatures of Hallstatt wares: high gloss burnished (graphite?) cup (27): 800–900 °C; high gloss burnished

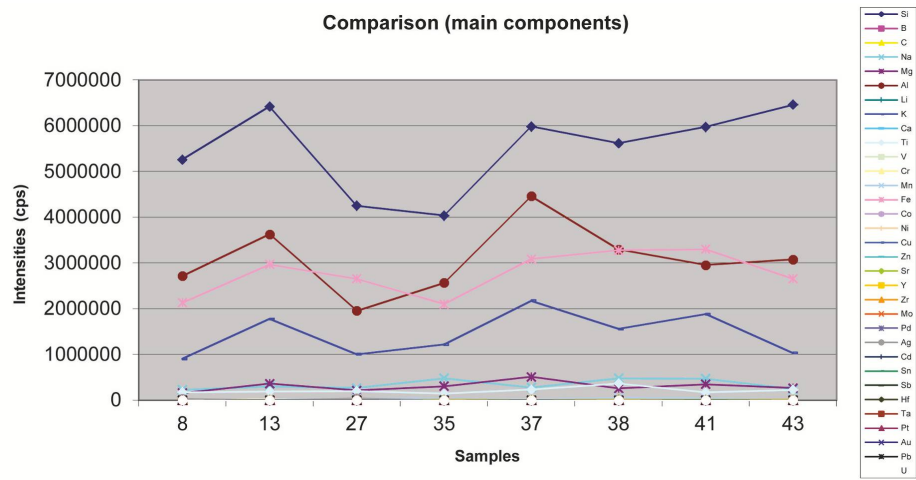


Fig. 7a Elemental ratios in the case of some major elements by LA-ICP-MS. (chart by Éva Széles).

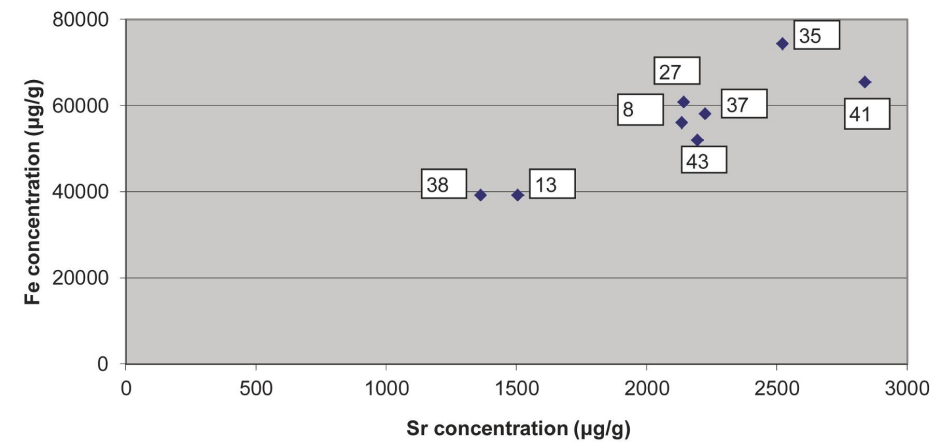


Fig. 7b Fe-Sr elemental correlation from solution based ICP-MS concentration measurements. (chart by Éva Széles).

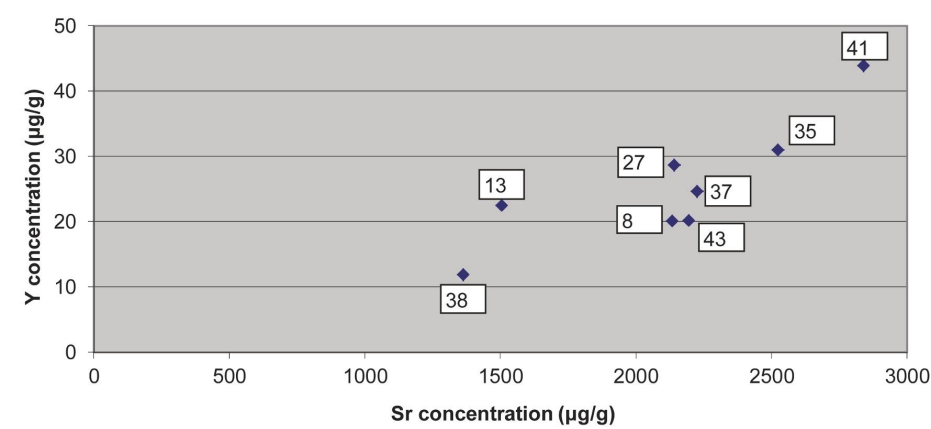


Fig. 7c Y-Sr elemental correlation from solution based ICP-MS concentration measurements. (chart by Éva Széles).

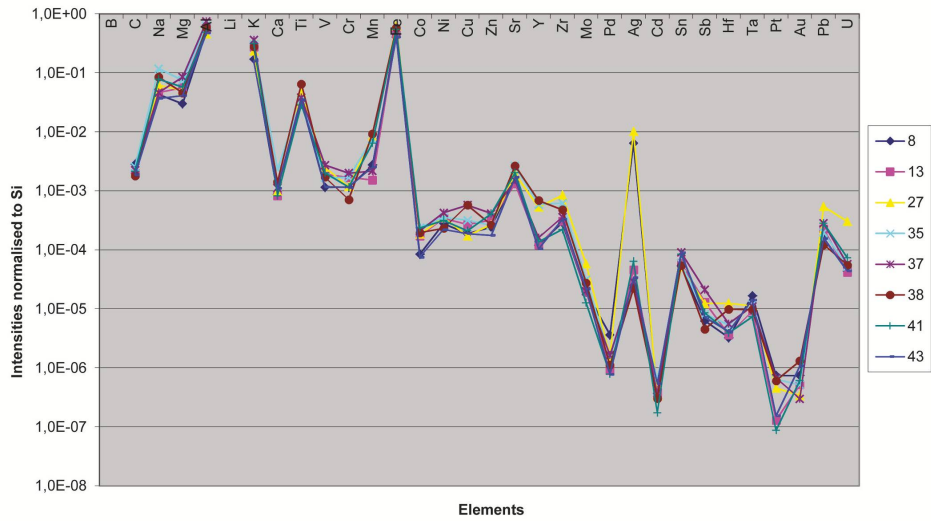


Fig. 7d Elemental profiles normalized to Si originated from LA-ICP-MS analysis and intensities. (chart by Éva Széles).

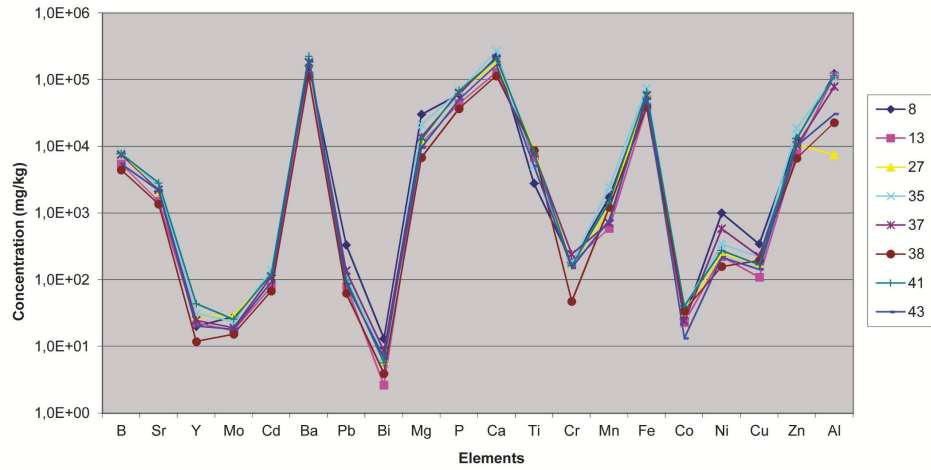


Fig. 7e Elemental profiles normalized to Si originated from solution based ICP-MS analysis and concentrations. (chart by Éva Széles).

(graphite?) pot (38): < 800 °C; high gloss burnished (graphite?) bowl (41) < 850 °C; bowl (13) 800–900 °C. XRD analysis shows that Hallstatt wares do not seem to be better fired than Vekerzug fine wares. Wheel made (35) and handmade (8, 13, 27, 37, 38, 41, 43) vessels (see below) do not show considerable differences in terms of firing temperatures either. What seems clear, however, is that ceramics, which are characterized by more careful production in terms of raw material preparation, building and surface preparation were better fired than general household products. The abovementioned firing temperatures could be reached using pits, open and kiln firings thus all these firing techniques can be considered (Gosselain 1992:246, Fig. 1; Blinman & Swink 1997:92, Fig.6; Kingery 1997:15, Fig. 4; Sillar 2000:65).

XRD analysis was also applied to examine whether the burnishing on several vessels was made by graphite. In Hungarian archaeological research it is a long-held assumption that in the Iron Age graphite was used for burnishing vessels although prior to this study graphite burnishing had not been examined using analytical techniques. In three cases graphite was indeed detected on ceramic surfaces. Graphite burnishing was indicated on a local biconical jar (Sample 8, firing: < 800 °C), on a Hallstatt bowl (13, firing: 800–900 °C) and on a local bowl (37, firing: 800–900 °C). Graphite was not detected on the supposedly graphite burnished Hallstatt cup (27, firing: 800–900 °C), bowl (41, firing: < 850 °C) and pot (Sample 38, firing: < 800 °C).

Vessel building techniques

The above section highlighted the similarities between Vekerzug and Hallstatt vessels in terms of raw materials, tempers, firing temperature and the utilisation of graphite burnishing. To add further data for comparison the building techniques of the ceramics are also compared. In Fabric 1 apart from wheel-made ceramics (2, 9, 12, 18, 34, 35), and slab-built ceramics (4, 6, 7, 27, 41, 44), the combination of slab building and the slow wheel technique is also observed (1, 9, 28, 39). In the latter case in the cross-section of the sherds the joining of slabs can be observed, but wheel marks also appear on the surface of the vessels. This indicates that the vessels were made by the slab technique and then were processed on a slow wheel. In Fabric 2 a cup (25) and a bowl (13) were made by the slab technique. A mug (26) shows the combination of the slab technique and slow wheel. The vessels in Fabrics 3–5 were all made by the slab technique.

In view of the above, it may be concluded that Vekerzug and Hallstatt (4, 13, 25, 27, 38) vessels were made in a similar manner. It must be noted, however, that the fast wheel technique appears in the case of vessels with the finest raw materials (Fabric 1).

Interpretation

Petrographic and LA-ICP-MS analyses indicate that the examined Hallstatt vessels at Nagytarcsa were most probably made locally from local raw materials. According to XRD analysis the firing temperature range of Hallstatt vessels was similar to Vekerzug vessels. The building technology is also similar and graphite burnishing similarly appears on Vekerzug (8, 37) and Hallstatt (13) ceramics.

Considering the technological similarities that have been observed, the appearance of Hallstatt vessels at Nagytarcsa could be understood through interpersonal relationships and also by trade. Previously, the rare occurrence of Hallstatt-type artefacts in Vekerzug assemblages, east of the Danube, did not suggest a strong social relationship between Vekerzug and Hallstatt communities.

However, west of the Danube, in Transdanubia (Hallstatt area), a considerable number of Vekerzug artefacts have been revealed through excavations. This suggests a strong Scythian affect on Hallstatt communities (Fettich 1931; Párducz 1965; Vékony 1986:263; Teržan 1998:520). Since the majority of artefacts were weapons and parts of horse harnesses, researchers envisaged a period of military conflict between the raiding nomadic Scythians and the settled Hallstatt communities. This view presented a vivid picture of the opposition between the settled late Hallstatt and the expanding Scythian communities (Kromer 1987:43–63; Kristiansen 1998:282–288).

Recent large-scale excavations, however, suggest that the relationship between the Vekerzug and Hallstatt communities was more peaceful from the sixth century BC (Gál & Molnár 2004:183–184; Kemenczei 2009:113). The results of ceramic analysis carried out in this paper also indicate that the relationship between Vekerzug and Hallstatt communities could be understood in terms of interpersonal relationships rather than war. Apart from recent archaeological data, sources from antiquity refer to the Scythian horse and weapon trade and also suggest peaceful communities with extensive exchange relations mainly from the sixth century BC (Harmatta 1968; Jerem 1981:114; Kemenczei 2009:28). Previous research emphasizes the extensive relationship between Vekerzug and other communities evidenced by iron objects and horses, which allowed the Vekerzug elite to acquire imports such as a bronze cauldron produced in an eastern Alpine Hallstatt workshop (Kemenczei 2003:181). Various ceramic products are also thought to have been traded from the Balkans and Central Europe (Kemenczei 2003:181). Exchange relationships concerning pottery production at Nagytarcsa also have to be considered as indicated by the abovementioned imported vessels and also in the case of graphite for vessel burnishing since in Hungary there are no graphite sources (only in phyllite) and it had to be acquired through long-distance exchange.

According to the spatial distribution of Scythian-type objects one of the most important locations in the Vekerzug–Hallstatt meeting zone was the area of the Danube Bend (Kemenczei 1977, 67; 2009:113), while the increased number of Scythian-type objects in the Little Plain (Hallstatt area in north-west Hungary and southwest Slovakia) also suggests the strong influence of the Vekerzug group (Parzinger, Stegmann & Rajtár 1988:162–178; Romsauer 1993:21; Gál & Molnár 2004:184).

Nevertheless, the Hallstatt vessels were most probably made locally at Nagytarcsa, their shapes revealing a distinct Hallstatt tradition. Hallstatt vessels could have been copied by local potters, but it is also conceivable that potters moved from one community to another. In the ethnographic literature it is often noted that in the light of changing circumstances technological practices were modified, but potters make decisions in the selection of materials and technology according to cultural norms (Sillar 1996). For example, where pottery is a female activity, after marriage a potter may introduce attributes and motifs from her home ceramic inventory into that of her husband's people (MacEachern 1992). In several African potting communities, individual movements across language boundaries, and especially matrimonial exchange, may lead to the coexistence of different traditions (Culwick 1935; Gosselain 1998). Movements between Hallstatt and Vekerzug communities are underlined by burials on both sides of the Danube showing 'foreign women' (Jerem 1981: 114, Abb. 7.; Kemenczei 2004:98). Thus social relationships between different communities may result in a co-existence of technological traditions at the regional and local level.

The typological variability within individual vessel types at Nagytarcsa (size of vessels, variability in their proportion, handle and decoration) and the variability in their raw materials may suggest that several potters or perhaps potters' groups/workshops made the ceramics. In traditional archaeological assessments wheel-made and handmade ceramics at the same site are often considered to be the result of the appearance of specialized workshops, which produced wheel-made vessels (Lengyel 1964:27; Dušek 1979:126, 136). Typological characterisations of the material examined from Nagytarcsa indicates increased variability in the vessels in terms of colour, wall thickness, vessel size, proportion, base form, handle form and decorations even within one vessel type. These all suggest that vessels were produced by several potters or workshops. Despite the fact that the vessels examined show increased variability in terms of their raw materials and tempers. It must be noted that carefully made fine wares (jar, bowl, cup, mug), including most of the Hallstatt wares, are associated with very fine or fine raw materials, which may suggest specialized production of certain vessels.

The former existence of several different potters may also be suggested because potters usually make one type of vessel in a particular way, within one vessel type raw materials and tempers are not changed. It also appears that one recipe is used for all vessel types (DeBoer & Lathrap 1979:116–117; Plog 1980:86–87; Tobert 1984:226–227; Chávez 1992:85; Sillar 1997:8; Frank 1998:83). The existence of several potters is also argued because the variability between raw materials required different technological knowledge and experience because the very fine-grained 'clean' raw material behaves very differently from the ones with coarse rock fragments during drying and firing (Rice 1987:104; Kilikoglou et al. 1995; Kilikoglou et al. 1998; Kilikoglou & Vekinis 2002). It must be noted, however, that there is no direct evidence for ceramic production at Nagytarcsa nor at any other Vekerzug group sites, such as kiln, wasters, production tools, raw materials, structural evidence for the curing/mining of clay and the presence of distinctive manufacturing assemblages, which could help to refine our knowledge on possible specialized ceramic production.

Summary

Hallstatt vessels, including fine and coarse wares, are rare in Vekerzug settlements. These vessels are often considered to be imported products. In this study this assumption was challenged and it was argued that complex social relations – other than, or in addition to, exchange – may also be detected and assessed through ceramic analyses. In this study 44 ceramics were examined petrographically, from which 4 Vekerzug and 4 Hallstatt wares were analysed by LA-ICP-MS and XRD techniques. The results suggest that the Hallstatt ceramics at Nagytarcsa were made locally, and their raw materials, tempers and construction techniques have similarities with the local wares. XRD analysis also highlighted similarities in their firing temperatures and the use of graphite for burnishing the exteriors of vessels was also indicated on both Vekerzug and Hallstatt wares. The ceramics examined in this study also argue for an advanced ceramic technology at the site since fine wares, including most of the Hallstatt ceramics as well, can be characterized by more labour input such as raw material preparation, surface treatment and firing than household products. The local production of Hallstatt vessels and the acquisition of graphite indicate that Vekerzug communities were open to adopting innovations both in terms of vessel types (Hallstatt) and technological practices (graphite burnishing). For this reason it is proposed that a complex social relationship existed

between the Hallstatt and Vekerzug communities that cannot be explained by trade alone, and movements of people from one community to the other also have to be taken into account.

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A BRONZE AGE SHIP MADE OF STONE: RECORD AND ANALYSIS OF A SHIP SETTING FROM LAU, GOTLAND

Peter Skoglund and Joakim Wehlin

Abstract: With only a few exceptions, the construction of the Bronze Age ship in Scandinavia has been interpreted mainly from two-dimensional miniature depictions: rock-art and bronze artefacts. In this paper we add a third feature, the Bronze Age stone ship settings, and argue that they represent practical vessels, at least partly. With such a view a third dimension becomes observable and provides possibilities for discussion about a full-scale representation of a Bronze Age ship. Different components in ship construction are discussed and compared with details found in depicted ships on rocks and bronzes. The discussion is based upon an analysis of a ship setting in Lau Parish on the island of Gotland in the Baltic Sea, visited and recorded by the authors in April 2009.

Keywords: Bronze Age, ship, ship setting, Gotland

Introduction

Thanks to work by Kristian Kristiansen, the importance of travel and interaction between people across long distances has been brought into the centre of Bronze Age research (Kahl and Kristiansen 1976; Kristiansen 1978, 1981, 1987, 1998, 2002; Kristiansen and Larsson 2005). In this paper we will draw attention to one aspect of this theme, and discuss the practical prerequisites for long distance travel by ship.

In the Scandinavian Bronze Age the ship played an important role as a symbol. The ship was depicted on rock art (cf. Ekholm 1916; Nordén 1925; Marstrander 1963; Burenhult 1980; Malmer 1981; Ling 2008) and on metal items (Kaul 1998, 2004) and in parallel to these pictures there were also graves built in the shape of stone ships (Capelle 1986, 1995; Artelius 1996; Artursson this volume). The great variety of the contexts in which ships are represented suggests that these representations were not intended simply to remind viewers of real ships, but of what ships stood for. That is, these ships are, at least in part, symbolic.

The abundance of pictures and monuments representing ships gives some clues to what Bronze Age ships might have looked like. But despite the very important symbolic role of the ship in the Bronze Age not a single wooden ship from this period is known from Scandinavia. However, parts of a possible plank built boat have been found in Haugvik, Norway (Sylvester 2006) and a few dugouts have been dated to the period (Sjöberg 1971; Hansen and Nielsen 1979; Rieck and Crumlin-Pedersen 1988; Rieck 1995, 1997; Berglund 1997; Ulfhielm 2004; Wehlin 2010).

Primarily based on analyses of pictures, there is an ongoing discussion about the character of Bronze Age ships, particularly concerning issues such as the prevalence of a hide or wooden ship tradition in the Bronze Age and whether there was continuity or discontinuity in the ship-building tradition from the Bronze Age to the Iron Age (cf. Marstrander 1963; Crumlin Pedersen 1970; Kastholm 2008).

Our starting point in this paper is that plank-built boats existed in the Scandinavian Bronze Age, as is known from, for example, Late Neolithic and Bronze Age England (Wright 1990; Roberts 1992; McGrail 2001; Clark 2004). The oldest plank-built Scandinavian vessel – the Hjortspring Boat – is dated to the fourth century BC.

However as noted, for example by Kastholm (2008:168), there are clear morphological similarities in two dimensional depictions of ships from the Bronze- and Iron Ages respectively. On a general level this may indicate continuity in the boat-building tradition throughout the Bronze Age and the Iron Age. A highly developed ship technology probably existed in Scandinavia long before the building of the Hjortspring vessel. Therefore, plank-built boats can be used as analogies when interpreting the evidence of pictures and monuments. However to take the discussion one step further there is a need to integrate the ship-shaped stone settings into the discussion. Attempts to reconstruct the Scandinavian Bronze Age (boat) building tradition have been based mainly on preserved Iron Age ships or two dimensional pictures on rock art and metal items (Marstrander 1963; Kahl & Kristiansen 1976; Strömberg & Strömberg 1983; Kaul 2003; Ling 2008). Ship-shaped stone settings have been taken into account only to a lesser degree (Rausing 1984; Capelle 1986; Artursson this volume).

As noted by Torsten Capelle and Magnus Artursson some stone ships do have special features that can only be understood in the context of a contemporary ship building tradition (Capelle 1986:25–35; Artursson this volume). Here, we will elaborate upon these ideas based on a Gotlandic example and try to demonstrate that in some cases there seems to be an analogy between ships made of stone and contemporary wooden ships. The discussion will be based on the record and analysis of a ship-shaped stone setting from Lau in Gotland. Before taking up this example we will give a brief account of the Gotlandic ship-shaped stone settings, a monument we will refer to as just ‘ship setting’ for the sake of simplicity.

Gotlandic ship settings

The Gotlandic ship settings are a well known phenomenon in Scandinavian archaeology, and date to the Late Bronze Age Montelius Period IV–VI (1100–500 BC). They are associated with cremation burials that are accompanied by bronze artefacts such as razors, tweezers and pins (Hansson 1927; Pettersson 1982; Capelle 1986; Artelius 1996; Hallin 2002; Skoglund 2008). Around 380 ship settings are known on the island, and c. 70 out of these have been excavated. They are located mainly along or close to the coastline. It is important to take into consideration the large variety in ship settings (Bradley et al. 2010; Wehlin 2010). Even though ship settings appear in other places (Capelle 1986; Artelius 1996;



Fig. 1 Geographical location of ship setting 41 in Lau parish, Gotland, with registered prehistoric remains (FMIS). Map: Joakim Wehlin.

Werner 2003; Skoglund 2008, Artursson this volume) the Late Bronze Age ship settings of Gotland have a number of features which distinguish them from their counterparts elsewhere in Scandinavia. They may be defined by a perimeter of standing stones, which often are paired across the long axis of the vessel, or they can be defined by a boulder kerb. The kerbs often mark the limits of low cairns, but other monuments take the form of a largely empty enclosure. At some of the sites with kerbs only the ends of the vessel were marked by upright stones. Many of the vessels were laid out in two sections, separated by taller stones placed half way along either side. Their sizes vary from less than ten metres up to forty-five metres in length. Although Gotland consists of limestone, the most common building material in ship settings is rounded grey-stone/granite, generally as boulders. Other details (below) may be equally significant. The end stones can be pointed and occasionally one end of the structure features a distinctive rectangular compartment. On the other hand, many of the structures are symmetrical and it does not seem to have been important to distinguish between the prow and the stern. The number of ship settings at each site varies, from one solitary ship up to nine vessels in close proximity (Bradley et al. 2010).

The ship at Lau

Our research area is located where boundaries of the three parishes Alskog, Garda and Lau converge east of the former bog *Ajkesmyr* in the south-east of Gotland. The ship setting at the focus of our discussion is recorded as Lau 41 in the Swedish National Heritage Boards sites and monuments register (FMIS) and documented as a small ship setting measuring only four metres in length. About 150 metres north of the ship setting is one of the largest cairns located on Gotland (Garda 1). With the large cairn centrally placed the Lau 41 ship setting is incorporated in a procession of prehistoric remains running NNE-SSW. The remains are located on a discrete natural rise on the 9 m.a.s.l elevation (Fig. 1). From north to south

the procession consists of Garda 4 (earlier documented, but today disappeared ship setting), Garda 3 (cemetery consisting of 27 visual remains of which nine are documented as ship settings), Garda 1 (cairn 4–5 metres high and measuring 35 metres in diameter), Lau 41 (ship setting and circular stone setting), Lau 141 (stone setting), Lau 45 (cemetery consisting of eleven visual remains of which five are documented as ship settings), Lau 46 (stone setting) and Lau 47 (stone setting).

The location is mentioned in the *Annals of Carl Gustaf Gottfried Hilfeling*, who visited the site in August 1797 (Hilfeling 1994:140ff). Hilfeling mentions a couple of oval- or ship-formed stone settings. One of them located south of the cairn was laid out with smaller stones, and only the front and back were marked by larger boulders. Most probably Hilfeling described Lau 41 (Hilfeling 1994:140ff). When the authors visited the site in April 2009 it became clear that the 4 m small ship setting, Lau 41, had been incorrectly registered in FMIS. The registered ship setting is only one side of a near 25 m long vessel (Fig. 2). In fact, the registered upright stones south of it mark the other end of a larger ship setting oriented N-S. The larger ship setting, then, measures 4 m at the broadest, which makes a length to width (L/W) ratio of c. 6:1. This ratio can also be seen on the ship settings at Gannarve in Fröjel parish? (Manneke 1967:43ff), Braidfloar in Levide parish? (Hansson 1927:73ff) and Gräne in Väte parish? (Zerpe 1998:7ff), all on Gotland. Further, the ship setting is built with grey/granite stones. The southern uprights measure 0.25–0.8 m in height and the northern end-stone measures 0.6 m. Between these ends a few kerb stones (< 0.3 m) are visible and the interior seems to be filled to some extent.

One feature that draws our interest in particular is the distinct rectangular compartment in the northern end of the ship setting (Fig. 3). This feature is extremely small and on a real ship could accommodate only one person. There is a similar feature on the

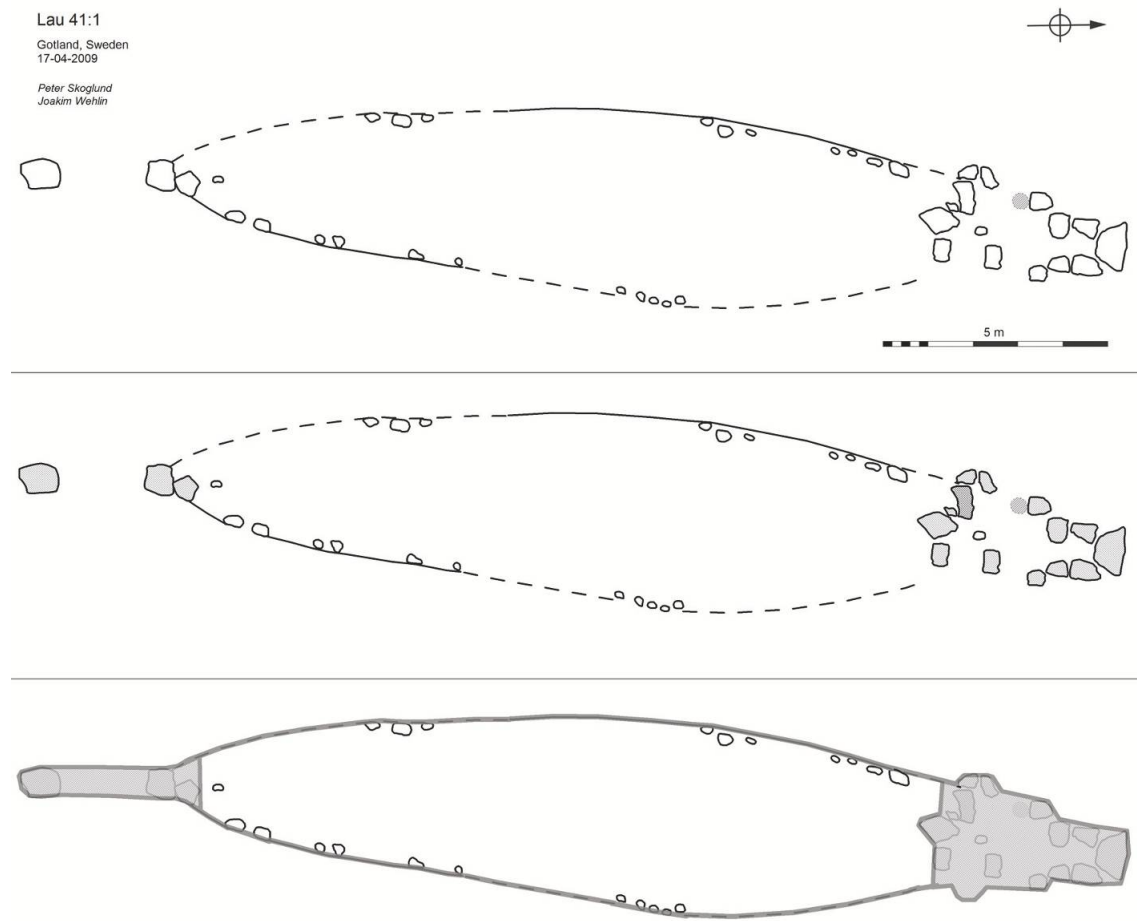


Fig. 2 Three plan drawings of ship setting Lau 41. Drawing: Joakim Wehlin and Peter Skoglund.

ship setting at Butraifs in Norrlanda parish (Hansson 1927:68). Traditionally, the Gotlandic ship settings seem to have been interpreted as pointed ovals, as shown in modern reconstructions. By visiting both restored or reconstructed and ‘untouched’ ship settings with the original plan drawings, another view is seen. Often one end of the ship setting has a rectangular feature which can be interpreted as a transom (i.e. a straight upright stern at a right angle to the longitudinal axis of the vessel). The latter was seen, for example, at the northern ship setting at St. Bjers in Stenkyrka parish, Gotland, excavated by Ulla Silvé 1953 (Silvé 1954). This was a previously unnoticed feature on Gotlandic ship settings and Silvé compared it with similar features found on ship settings in the Baltic countries. On those vessels the transom stern often appears together with cross-laid stone rows representing thwarts or the ribs (Ohlmarks 1946:65; Silvé 1954:24). Further, these eastern Baltic ship settings commonly appear with extended uprights running from one of the ends, referred to as the trunk of the ship (Grewingk 1878; Šturms 1931:111; Ohlmarks 1946:65). This may be of interest considering the extended upright at the Lau 41 ship setting.

The ship setting in Lau is, as far the authors are concerned, untouched by means of modern restoration or reconstruction and it makes an interesting point of departure for discussing possible components and construction details of the Bronze Age ship.

Ships in comparisons

The ship at Lau has certain characteristics that make it plausible to suggest that it was intended to represent a replica of a wooden ship. As is known from depictions of ships on rock art, and on metal items from the Bronze Age, ships were not symmetrical. The stern was constructed differently compared to the prow. This trait distinguishes Bronze Age ships from Iron Age ships that have a symmetrical shape. Moreover, Bronze Age ships – as we know them from pictorial evidence – have raised keel extensions in the stern, and that, during the Late Bronze Age, is markedly upturned (Kaul 1998:87–112, 2003:187–200; Ling 2008:102–105).

As shown in rock art, the stem and the upturned keel extension often ended in animal heads. We must reckon these to have been sculptured out of wood even although preserved wooden details from Scandinavian Bronze Age boats are lacking. If we accept this conclusion, then there was a tripartite division of the wooden boats. The stern and the prow were constructed out of massive wood while the middle section of the boat – where the paddlers were sitting – was a lighter construction made of planks. This interpretation was suggested earlier by Håkan and Märta Strömberg (1983) from an analysis of ship depictions in the rock art of Bohuslän. We suggest that this perspective can also help us to understand the specific design of the Lau ship (Fig. 4).



Fig. 3 The rectangular compartment in the northern end of the ship setting. Photo: Joakim Wehlin 2009.

The ship at Lau has a tripartite division, too. The central part of the ship is visible through smaller stones measuring 0.1×0.1 – 0.2×0.3 m that mark the sheer-line of the boat. The square compartment in the north and the southern pointed end, together with the raised stone further south, have another character. These parts of the ship are made of heavier stones measuring 0.3×0.3 – 0.6×1.0 m. We suggest that the material chosen in different parts of the ship reflects the use of planks and massive wood in real ships. Moreover the upright stone in the very south measuring 0.25 – 0.8 m is equivalent to a raised keel extension. This feature is known from rock art ships (Figs. 2 and 4).

The symmetry of the ship is further underlined by the accurate division of construction. The central and light part of the ship make up two-thirds of the total length while the rest of the ship is evenly divided between the more heavily constructed northern and southern parts of the ship, given the proportions 1:6, 2:3, 1:6 for the total length of the ship.

The Hjortspring boat, which is the oldest preserved Scandinavian wooden ship, dated to c. 400 BC, was made of five linden planks with a length of c. 15 m (Valbjørn 2005:71). The Lau ship is c. 24.0×4.0 m making it larger than the Hjortspring boat, which had an estimated length of 18.6 – 19.6×2.0 m (Crumlin-Pedersen 2003:36) (Fig. 5). The supposed division between the lighter and heavier construction of the Lau ship make it possible to calculate approximately the length of the planks required for the construction. The length of these planks – if made of one piece of wood – could be estimated as c. 17.5 m.

The Hjortspring boat could be used for yet another parallel.

In it there were ten seats for two paddlers each spaced with a metre in-between (Bojesen-Koefoed et al. 2003:48). This would allow a crew of 20 for paddling, two helmsmen and an unknown additional number of crew members (Vinner 2003:104). If we use this data as an analogy the Lau ship would have held a crew of c. 30 paddlers.

In his study of ship settings Gad Rausing distinguished between narrow canoes primarily used for long distance travelling and warfare and wider and shorter vessels used by merchantmen. The war canoes he suggested had length-to-width ratios between 8:1 and 6:1. At c. 24 m long and 4.0 m wide the ship from Lau falls within this category of presumed war canoes (Rausing 1984:49).

The square compartment in the north end at the Lau ship is perfectly designed to fit for one person; presumably the commander of the crew who was operating the steering oar. The compartment is in a prominent position. The occurrence of the steering oar in Bronze Age contexts is disputed (Kaul 2003), but indications do occur on pictures (Kastholm 2008), and it seems reasonable to assume that the square compartment not only had a social function – i.e. to set the captain apart from the crew – but that it was also related to the steering of the ship.

This square compartment is not found on the Hjortspring vessel, which in plan is pointed with symmetrical stems (Fig. 5). In contrast the British sewn-plank boats, dated to c. 2000–1700 cal. BC (Wright et al. 2001), have more or less straight ends or transoms. Moreover, the three British examples which could be properly reconstructed, Ferriby I (15.4×2.6 m), Brigg ‘raft’ (12.2×2.27 m) and Dover (11.7 – 15×2.3 m) were all quite long and

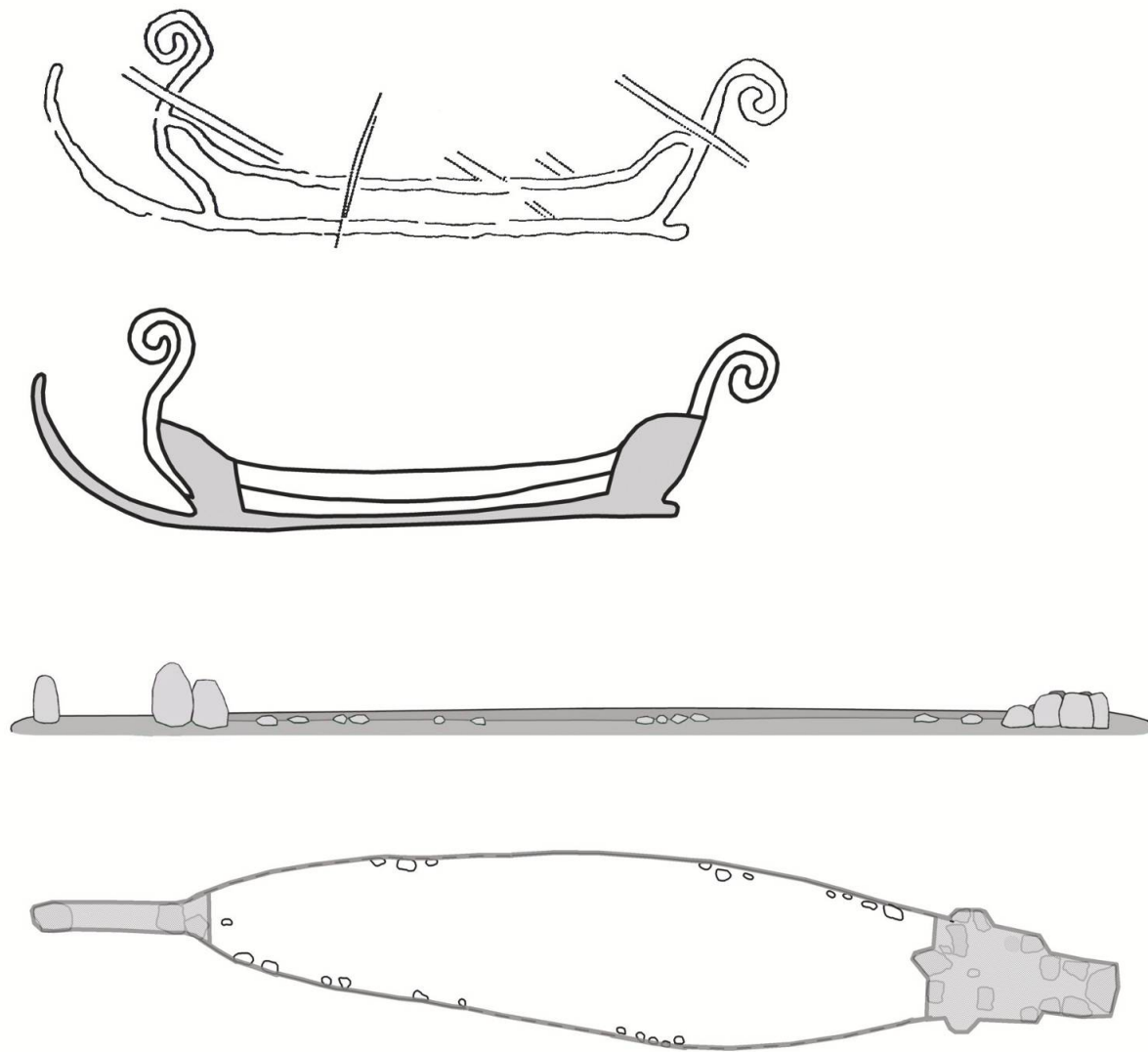


Fig. 4 Above: Rock-art ship from Kville in Bohuslän (after Strömberg and Strömberg 1983). Below: Plan and profile of ship setting Lau 41. Drawing: Joakim Wehlin and Peter Skoglund.

narrow vessels with a L/W ratio of 8:1–6:1 m (McGrail 2001:190; Marsden 2004:94). Furthermore, the best preserved vessel Ferriby I has an asymmetrical plan which might be compared with the discussion concerning the pictorial ships mentioned above (Kaul 1998, 2003; Ling 2008) (Fig. 5). The reconstruction of the same vessel (see figure in McGrail 2001:186) suggests one end has a squared compartment with comparable measurements to the construction of the ship setting in Lau. This enables us to make a number of comparisons between the ship setting in Lau and the British boat findings.

Firstly, even though the British sewn-plank boats are much shorter, the L/W ratio is the same. Secondly, the transom end appears on both kinds of vessels. This detail has also been recorded on other Baltic ship settings. Thirdly, there is a different shape to prow and stern which creates an asymmetrical outline. Another parallel that might be drawn concerning the plan outline is the position of the broadest part of the ship. On the Lau construction it is positioned slightly towards the suggested stern with the proportions (excluding the ‘trunk’) 5/9 to the prow stone and 4/9 to the stern stone. This phenomenon is also seen on the British boat findings.

Another parallel using the British sewn-plank boats as analogies, even though they all are flat-bottomed, is the fact that they have heavier bottom planks. On the Ferriby I boat the bottom board extended creating a plank-keel (McGrail 2001:191). This could explain the larger end stones on the Lau ship setting. The heavier bottom plank also allowed for the possibility of external decoration as known from the Hjortspring vessel, where two hollowed block stems were fastened on top of the bottom plank (McGrail 2001:193). Boats with conventional stem-posts or keel are first known from the fourth century AD (McGrail 2001:192f).

Discussion

If the idea put forward that the Lau ship is a three-dimensional stone representation of a contemporary wooden ship is accepted, then the proportions of the vessel and the estimated size of the crew make this a ship primarily designed for long distance travelling (Rausing 1984; Bradley 2008). The width of the ship would make possible not only the transportation of c. 30 paddlers, but also the shipment of goods or people not involved in crewing the ship.

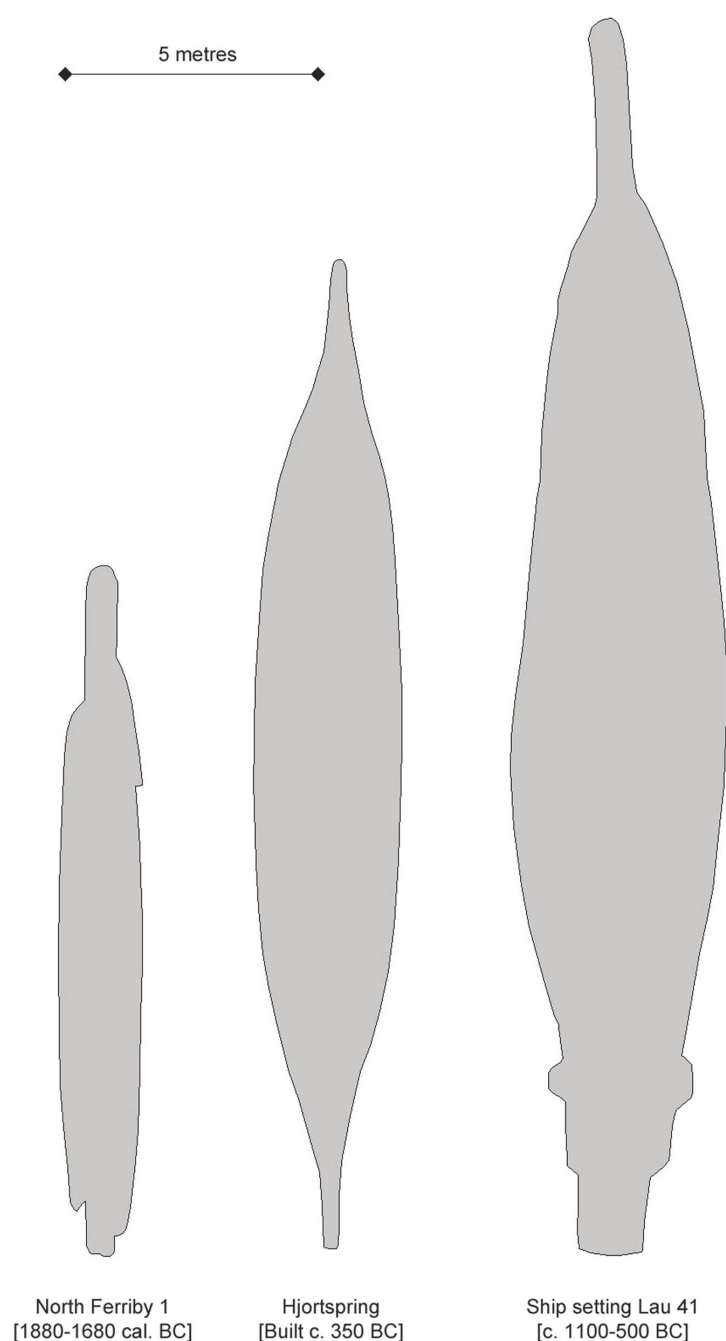


Fig. 5 Three plan drawings of different prehistoric ships. Drawing: Joakim Wehlin after Rosenberg 1937, Wright 1990, Wright et al. 2001.

These kinds of ships were most probably symbols of status and presumably used for transportation between Gotland and the mainland, and beyond to other regions of Scandinavia. The very clear distinction between the middle section used by the paddlers and the slightly raised square compartment designed for one person, was presumably to display the hierarchical division between the crew and the commander. This might explain why burials and traces of other activities are sometimes found at the very end of the ship settings.

Similar divisions are also known from other Bronze Age contexts; on ships depicted in rock carvings there is sometimes a division between ordinary men, paddling the ship, and a captain, leading the voyage. There are also some rare examples of items interpreted as miniature paddles, found in Late Bronze Age graves. These symbolic paddles, dating to 1100–700 BC, and thereby

contemporary with the Gotlandic ship settings – might indicate the social status of the dead as a person with special obligations aboard a ship (Haupt and Fenger 2003:126f; Kaul 2005:142).

From this perspective the ship at Lau not only provides insights into the ship-building tradition of the Scandinavian Bronze Age, but it also reveals information on the social setting of long distance travelling, something that has been discussed thoroughly in the work of Kristian Kristiansen (Kahl & Kristiansen 1976; Kristiansen 1978, 1981, 1987, 1998, 2002; Kristiansen & Larsson 2005).

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SHIPS IN STONE: SHIP-LIKE STONE SETTINGS, WAR CANOES AND SAILING SHIPS IN BRONZE AGE SOUTHERN SCANDINAVIA

Magnus Artursson

Abstract: Ship-like stone settings were introduced in southern Scandinavia during the later part of the Late Neolithic and gradually became more common during the Bronze Age. Cremations (either singly or in groups) are often found in or nearby the stone ships from the late Bronze Age, and most of these monuments seem to have been used as markings for graves in this period. The length-width index for ship-like stone settings seems to vary substantially, somewhere between 1:2 - 1:10. This ratio has a direct bearing on how a vessel performs in the water. A high ratio of 1:5 - 1:10 ensures that it will perform well when it is paddled or rowed, while a low ratio of 1:2 - 1:4 gives it optimal qualities for sailing. This means that if the southern Scandinavian stone settings depict actual ships from the period, then different types of sea vessels must have existed, and these would have been optimized for different kinds of propulsion. Assuming that the ship-like stone settings are depicting real canoes and ships, we can conclude that there really were different types of vessels for varying tasks, like canoes for combat, ritual display and processions and heavy-duty sailing ships for open water conditions. It is therefore suggested that our view of the situation should involve a more dynamic picture of the range of sea vessels in use in the region during the Bronze Age.

Keywords: Scandinavia, Bronze Age, Stone settings, Ships, Late Neolithic, sail

Introduction

Ship-like stone settings were introduced in southern Scandinavia during the later part of the Late Neolithic, 1800-1700 BC, and gradually became more common during the Bronze Age (Nicklasson 2005:61). They can sometimes be found close to or under barrows (Figs. 1 & 2), but also in open cemeteries, both single and in small groups. In some cases they have been placed in lines with the stems adjoined to each other (Grimlund-Manneke 1979:46; Artelius 1996). They can also be found in cemeteries with other types of stone settings. Often one or several cremations are found in or nearby the stone ships from the Late Bronze Age, 1100-500 BC, and during this period most of these monuments seem to have been used as markings for graves. There are exceptions where no cremations are found, but this is not uncommon when it comes to other types of Late Bronze Age stone settings, actually strengthening the hypothesis that the ship-like stone settings in general can be interpreted as grave monuments (Artelius 1996).

Ship-like stone settings and rock art ships

The layout of the ship-like stone settings shows that the majority have a more or less symmetrical (in Swedish *spetsgattad*) form, showing considerable similarities with the ships from the Iron Age excavated in southern Scandinavia (Fig. 3). This supports the existence of a longstanding local boat-building tradition in the region (Ling 2008:190). Unfortunately, there are no preserved Bronze Age boats or ships from the region, only quite simple log boats (Crumlin-Pedersen 2003:220ff; Berntsson 2005). The only excavated and well documented vessel that shows great similarities with the ships depicted in rock art and on metal objects is the Early Iron Age Hjortspring boat from the island of Als in southern Denmark, which has been ¹⁴C-dated to 400-300 BC (Kaul 2003:175). There are also some single finds of wooden objects from Scandinavia that most likely derive from similar

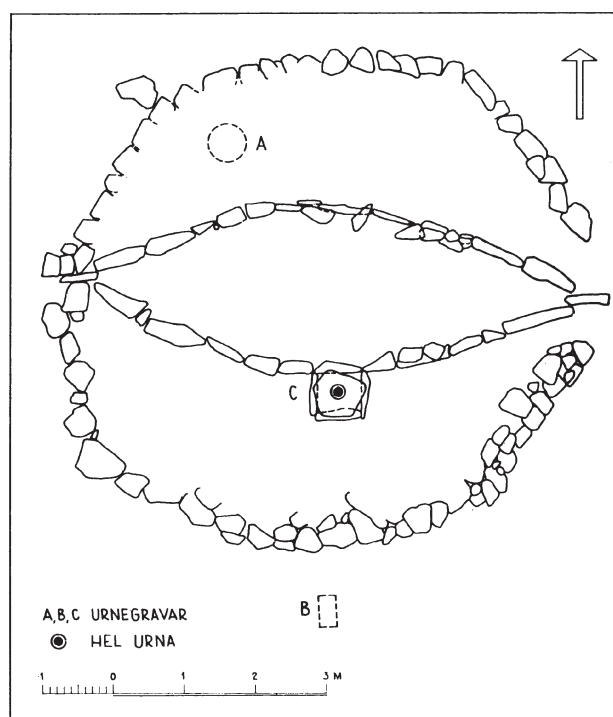


Fig. 1 Late Bronze Age ship-like stone setting found under a barrow at Lugnaro, Halland, southern Sweden. A, B and C mark the positions for cremation graves, and the black dot with a line marks the position for a whole urn, used as a container for cremation grave C (from Lundborg 1974).

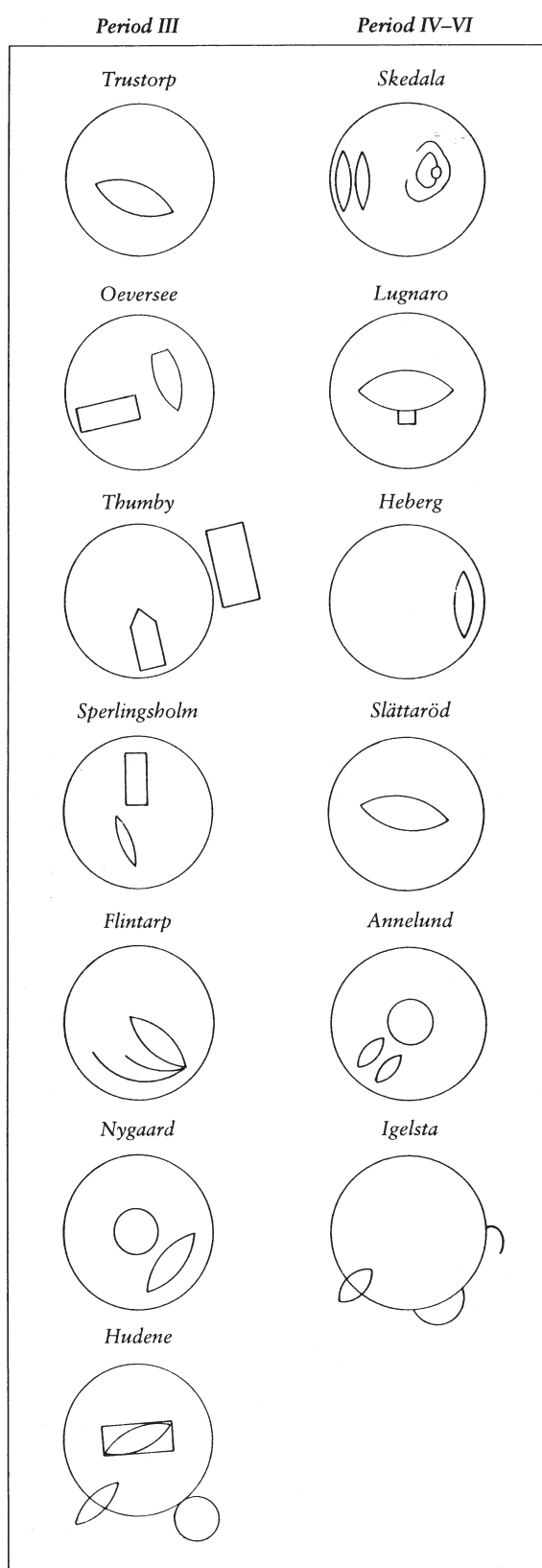


Fig. 2 Schematic picture of the layout for some of the Bronze Age barrows with ship-like stone settings and other stone constructions from southern Scandinavia, dated to Montelius Periods III-VI, 1300-500 BC. Illustrations not to scale (from Artelius 1996).

vessels (Jansson 1994; Crumlin-Pedersen 2003; Ramqvist 2009), and this type of war canoe appears to have been quite common in the region. This assumption is further strengthened by the fact that similar types of vessels have been depicted in Bronze Age rock art all over southern Scandinavia (Ling 2008:187; Earle & Kristiansen 2010: 226ff).

Interestingly, the majority of rock art ships seem to follow a strict dimensional code regarding the length of the hull and the stems: 80% of the total length of the ship is composed of the hull, while the prow and keel extension make up 20% of the length. These proportions apply, more or less, regardless of the size and dating, and correspond with the proportions of the Hjortspring boat (Ling 2008:189f). Also, the number of crew strokes in the rock art ships corresponds well with the size of the vessels; the larger the ship the more numerous the crew strokes are (Ling 2008:191ff). We know that the Hjortspring boat had a crew of 20 paddlers and one or two helmsmen, probably including a warrior leader (Vinner 2003), and that the great majority of Late Bronze Age rock art ships have between 7-20 crew strokes. This suggests that this might have been the typical size for war canoes.

This evidence strongly supports the assumption that south Scandinavian rock art depicts real ships and boats that were in use in the region during the Bronze Age and Early Iron Age, approximately 1700-200 BC. This is a view that Kristian Kristiansen (2004:111ff) strongly supports. He has argued that the variation in design and size in contemporary rock art ships in and between regions reflects both the existence of a varied set of ship types in the individual regions, and a variation in design of these types between regions.

If one studies the length-width index for Bronze Age ship-like stone settings in southern Sweden and the island of Gotland, there seems to be a substantial degree of variation, somewhere between 1:2-1:10 (Fig. 3), though a comprehensive study has not yet been attempted (Artelius 1996). This is an interesting fact if one considers them to be depictions of real canoes or ships. The ratio between length and width in a canoe or a ship has a great influence on its characteristics and how it performs in the water. A high ratio of 1:5-1:10 would ensure that a vessel performed well when paddled or rowed, while a low ratio of 1:2-1:4 would endow it with the optimal qualities for sailing (see Cederlund 1980 for discussion).

This means that if the south Scandinavian stone settings are depictions of actual ships from the time period, different types of sea vessels must have existed, and these would have been deliberately constructed and optimized for different kinds of propulsion. This would suggest a more dynamic picture of the range of sea vessels in use during the Bronze Age in the region in contrast to the stereotypical view of the situation. Actually, some of the stone settings with a low ratio have a teardrop-like shape, with one pointed end and one rounded, which could mean that some of the sailing ships had a different, more specialized design, perhaps better suited for this kind of propulsion (see Fig. 3).

The length-width index for the Hjortspring boat, which we know was paddled (Haupt 2003:119ff), is somewhere between 1:8-1:10 depending on how the vessel is reconstructed (Fenger 2003:89ff). This index value is in full accordance with the one predicted for paddled vessels in Figure 3.

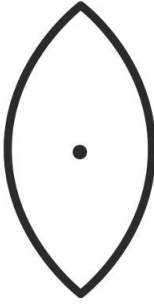
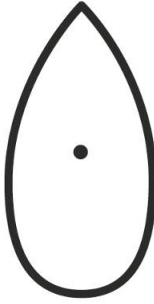
20x2,5m	10x2m	8x2,5m	7x3,5m	7x3,5m
				
1:8	1:5	1:3,2	1:2	1:2
War canoes		Sailing ships		

Fig. 3 Length-width index for different types of boats and ships and suggested functions.

War canoes and sailing ships

Comparing the ship-like stone settings with ships depicted in rock art and on metal objects, the latter two usually seem to reproduce some kind of war canoes, while the variation in shape and type in ship-like stone settings seems to be greater. Assuming that the ship-like stone settings are depicting actual canoes and ships, we can presume that there actually existed different types of vessels for varying tasks, like war canoes and ships for combat, ritual display and processions and heavy-duty sailing ships for open water conditions. The reason the ships in rock carvings and on metal objects almost exclusively seem to represent specialized vessels for combat, ritual display and processions might be that their symbolic meanings were greater, and this was considered important when it came to pictures with a symbolic message.

The existence of sailing ships in Scandinavia before the Late Iron Age, AD 550-1050, have been questioned for a long time, though sails have been in use since at least the third millennium BC in the Mediterranean (McGrail 2001). In my view, it would not be surprising if this knowledge had spread along the Atlantic coast and the large rivers in central Europe to southern Scandinavia as early as the second millennium BC. Long-distance contacts

have traditionally been considered important for the gradual transformation of society in the area during the Bronze Age and the introduction of the classical Bronze Age cultural complex around 1600 BC in southern Scandinavia.

It would therefore actually be surprising if the art of sailing had not been included in this exchange of material culture and ideology, though the technological challenge to locally manufacture the amount and the quality of textiles needed would probably have been great. For comparison, studies on the manufacture of sails in the Viking Age (AD 750-1050) show that they were quite labour intensive and expensive to make (see Bender Jørgensen 2005; Cooke & Christiansen 2005; Möller-Wiering 2005 for discussion), which means that the investment in time and labour during the Bronze Age must have been substantial. The Bronze Age sails, as well as those from the Viking Age, are believed to have been made from large sheets of high quality wool fabric, which would have been covered with a dressing of hard and soft tallow and ochre to give it the right air permeability, stiffness, weight and surface smoothness (see Cooke & Christiansen 2005:73f for discussion).

A logical conclusion based on the discussion above is that the sails must have been produced by highly skilled craftspeople. This

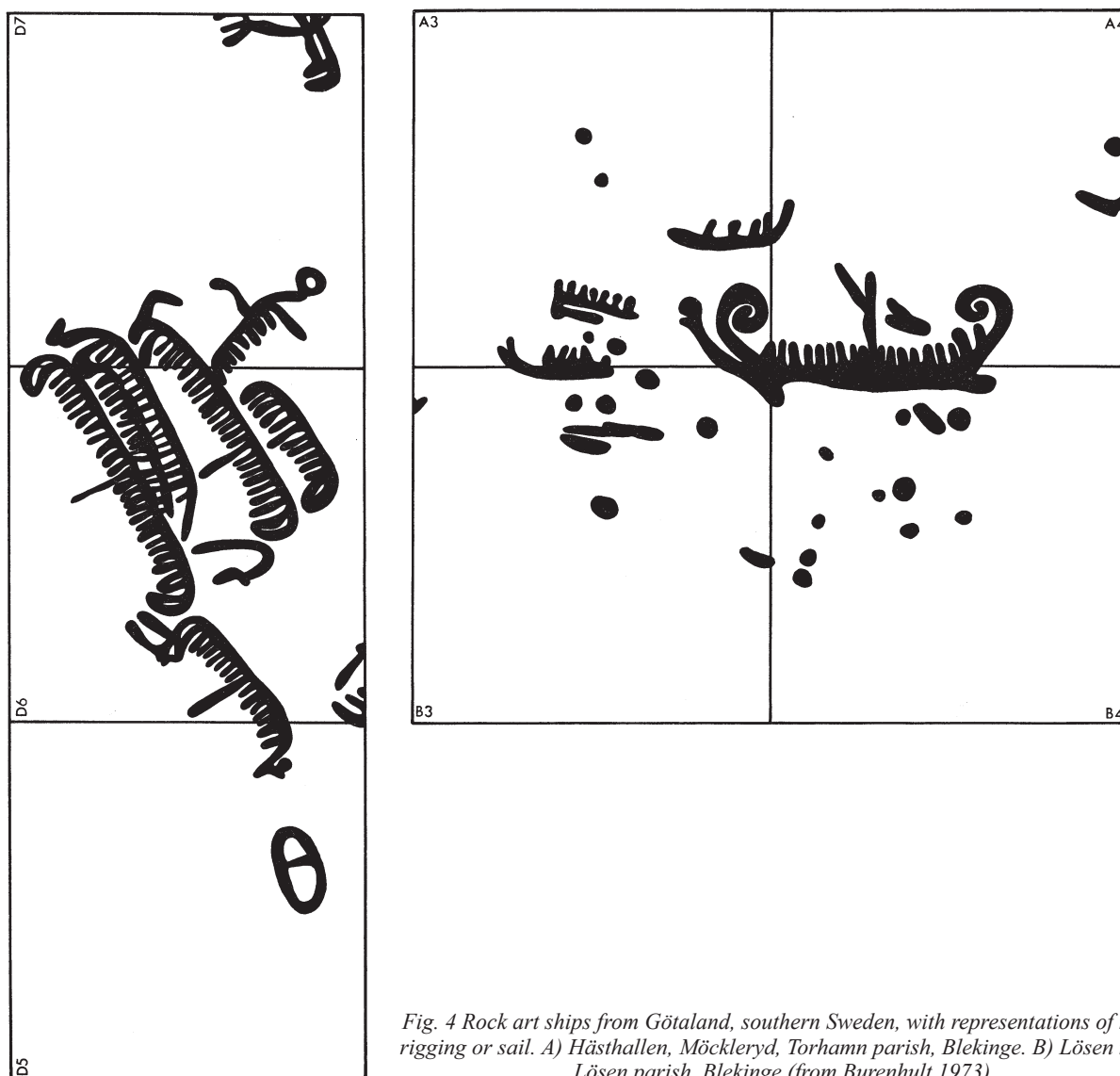


Fig. 4 Rock art ships from Götaland, southern Sweden, with representations of mast, rigging or sail. A) Hästhallen, Möckleryd, Torhamn parish, Blekinge. B) Lösen no. 3, Lösen parish, Blekinge (from Burenhult 1973).

must of course also be true when it comes to the ships and boats themselves, as they represent a massive investment in both labour and material. These individuals with specialized skills were, with all probability, in one way or another, controlled by chiefs to provide them with the means to participate in the long-distance exchange of goods and ideas. Also, the knowledge of navigation and handling of different types of sea crafts must have been in high demand, providing opportunities for specialized, skilled helmsmen to participate in sea travel (for discussion see Kristiansen 2004; Ling 2008).

Boat- and shipbuilding, including the production of sails and rigging, can be seen as important parts of one of the major technological complexes, together with e.g. metal working, house building, agriculture and textile production, all of which experienced significant improvements during the Bronze Age. In parallel with these technological developments, society in southern Scandinavia was undergoing a general transformation towards a much more complex structure, where decentralized polities in the form of small and medium-sized chiefdoms gradually started to dominate the scene. In combination, these two lines of development must have had a multiplying transformative effect on society and how long-distance contacts developed over time (for discussion see Sherratt 1993; Kristiansen 2006; Artursson 2009).

The actual material evidence for the use of sails in southern Scandinavia during the Bronze Age is very limited, though there are a few ships reproduced in rock art and on metal objects that seem to have some kind of representations of mast, rigging and/or sail, but in most cases the details are ambiguous and hard to interpret (see Fig. 4). Where the ship-like stone settings are concerned, there are some indications of symbolic markers for masts in the form of postholes, stones or small, stone-built grave cists for cremations that have been placed centrally in the monuments (Burenhult 1973; Pettersson 1982; Rausing 1984; Artursson 1987; 2009:223).

Interestingly, one of these stone cists placed centrally in a small, Late Bronze Age ship-like stone setting at Fardume, Rute parish, RAÄ 77, on the island of Gotland, Sweden, contained three fragmented house-urns and burnt human bones (Pettersson 1982:54, 62, fig. 51, 84ff). A similar find was made in a stone cist placed in a ship-like stone setting close by this site, at RAÄ 18, also containing a house urn (Äijä 1982:137f, 143, fig. 97). Both these stone ships have a length-width index of approximately 1:2, which supports their interpretation as sailing ships (Äijä 1982:143, fig. 97) (see Fig. 3).

The connection between ship-like stone settings with

characteristics for sailing ships and finds of house urns seems to be well established on Gotland, and it is most likely that the two are symbolically connected. For instance, they may have been markers indicating involvement in long-distance contacts and sea travels to continental Europe, where house urns were probably first introduced, and where they were still in use during the late Bronze Age (Sabatini 2007:144f).

Conclusion

This paper has presented a much more complex picture than is usually assumed of the sea-going vessels in use in southern Sweden and on Gotland in the Bronze Age, but it is in full accordance with the rest of the material testimony of how the stratified polities in southern Scandinavia were organized and how long-distance networks spanning large parts of Europe were designed (Kristiansen 2004, 2006; Ling 2008; Artursson 2009, 2010; Kristiansen & Larsson 2005; Earle & Kristiansen 2010). The appearance of identical rock art ships in central coastal regions all over southern Scandinavia testifies to the importance of long-distance maritime networks and sea journeys involving seafaring specialists, chiefs and warriors, constituting a maritime praxis with far-reaching consequences for our understanding of this time period (Kristiansen 2004; Ling 2008:209ff; Ling & Cornell 2010).

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THERE WAS SNOW IN THE BRONZE AGE - THE ROLE OF WINTER IN SPREADING INNOVATIONS IN THE BRONZE AGE

Jussi-Pekka Taavitsainen and Timo Kuokkanen

Means of transport are the measure of culture. The nations that have been able to make most use of them have been in the forefront of history, while those whose means of transport have been limited in comparison with others have been left behind both economically and culturally.

Väinö Voionmaa (1933)

Abstract: Pastoral and mobile economies have been given a leading role in Eurasian prehistory, with a focus on their development from cattle herders with wagons to horse riders, and on related equipment and technology. Eurasia, however, also has taiga and tundra zones, with winter conditions prevailing throughout most of the year. With their hunting-fishing economies, these areas were integrated into the Bronze Age network by the mid-second millennium BC. Mutually distant communities also maintained and developed their social ties in winter, as facilitated by frozen waterways and bogs. Developed winter transport equipment, such as skis and sledges, was a further precondition. The article presents different types of Bronze Age sledges, with an emphasis on economic background factors. Expanding commerce required the improved transport of wilderness products to middlemen and markets.

Keywords: Winter transport, sledges, reconstructions, Eurasia, Fennoscandia, Bronze Age

Introduction

Travel and the transmission of knowledge provide the main theme of Kristian Kristiansen's and Thomas B. Larsson's book *The Rise of Bronze Age Society. Travels, Transmission and Transformations* (2005). The presentation of the monograph begins with following words: 'Beginning with state formation and urbanization in the Near East c. 3000 BC and ending in central and northern Europe c. 1000-500 BC, the Bronze Age marks a heroic age of travels and transformations throughout Europe' (Kristiansen & Larsson 2005). The central role in the technology of travel is usually given to the wheel. Wheeled transportation has clearly had a huge impact on social and economic development. Its importance as an innovation and a transmitter of languages, populations and innovations is distinctively underlined for example by the title of David W. Anthony's seminal work *The Horse, the Wheel, and Language. How Bronze-Age Riders from the Eurasian steppes Shaped the Modern World* (Anthony 2007; see also Kristiansen 2008). On the other hand, the importance of the period, the Bronze Age, is stressed not only by archaeologists. The social anthropologist Jack Goody has recently discussed 'the relative unity of the European and Asian continents rather than their differences, a relative unity that began with the Bronze Age Revolution' (Goody 2010: 1).

This contribution is about technology and techniques of transport equipment, the prerequisites of travel and transmissions of products, ideas and genes in the northern parts of Eurasia and especially in Fennoscandia. It also takes into consideration the usually ignored severe winters of the Bronze Age in Eurasia (Kristiansen 1998: 27-31) and the fact that winter transport equipment was, in fact, the wheel of the Eurasian tundra and taiga zone. Overlooking movement over snow-covered terrain has unfortunately led to the invisibility of winter transport equipment and its importance in major archaeological syntheses ever since J. G. D. Clark's classic *The Prehistoric Europe: the Economic Basis*

(Clark 1952: 293-301). When discussing the spread of various eastern artefacts and technologies, such as Mälars axes, textile pottery, asbestos ceramics, Ananino celts etc. during the Bronze Age and Early Iron Age in the circumpolar zone from the Russian steppes and the Urals to Scandinavia (Denmark excluded), the question arises of the role of winter and winter vehicles such as sledges and skis in this process.

The importance of winter for moving and transport in Eurasia

In summer conditions, land transport routes did not exist in the same sense as today. Easily passable terrain such as ridges, heaths and long surface outcrops of bedrock were used for travelling. Naturally, also long and forked bodies of water served as roads and transport ways. Hilly and wooded terrain, bogs, rivers and lakes cutting the land routes were obstacles during the snowless period. During the long journeys even carrying personal equipment and provisions was a heavy task, not to mention merchandise. On longer journeys in particular, the most convenient way to transport goods was by water.

The winter changed the situation dramatically. Impassable bogs became good winter roads. Lakes and rivers could also be used in winter. Easier travelling saved time and energy. In wintry forested terrain it was easier to transport catches of game, camping equipment as well as merchandise.

Heavily loaded sledges were easy to draw on snow, especially when using dogs. In fact, during the winter, the prerequisites for people moving and travelling were far better and more versatile than in the summer. Even the range of travelling was longer in the winter despite suitable water routes that could also be used in the summer.

Winter was also an active period for social life. Collecting and storing foodstuffs was less intensive than in the spring, summer and autumn. In winter there was more time to maintain social ties. Our idea about distances, whatever the season was, is totally different today. Ethnographic examples tell us, how e.g. Eskimos could journey thousands of kilometres to visit other groups. It has been estimated that under favourable conditions objects from the Eskimos of the Bering Strait might reach their kinsfolk on Hudson Bay within two-and-a-half years (Birket-Smith 1972: 384, 392).

Examining the prerequisites of travel on water in northern Russia and Siberia we notice how most of the rivers of this vast region run from south to north. This is not an advantage in east-west travel and traffic in the summer months. In the winter, the situation is and was totally different. Snow and the freezing of the terrain and bodies of water made movement possible even in surroundings that were inaccessible in the summer. Vast areas of bogs and wetlands are good examples of this.

We have no exact knowledge about prehistoric winter traffic. We do not know how the distances were travelled by expeditions. Were objects and goods moved in stages over shorter distances relay-style, by different expeditions, or did a single expedition travel all the way? Travellers may have moved from one village to another enjoying reciprocal hospitality. This meant that it was not necessary to carry a large quantity of foodstuffs for people and dogs. Nor was there a need to spend time acquiring nutrients. Moreover, travel also became faster, because it was not necessary to set up one's own camp every night.

We may assume that in the Bronze Age expeditions consisted of a few sledges. We can further guess that the expedition was headed by an experienced man who also knew the route. Other participants were individuals or people in good health. Skiing was their way to move forward and the speed was that of easy walking. There was no point in hurrying in untouched snow. The guide skied first, orientated and opened the trail for the dogs which made the going easier. One of the authors (TK) once helped the dogs by using snowshoes. An exceptionally good period to travel was late winter. All people living in these climatic conditions, know that the crusted snow of the season makes travelling faster because the frozen crust on the snow bears skiers as well as dogs and their sledges.

Sledge types of the Bronze Age

Finland's bogs and lakes have revealed some 200 finds of sledge runners, boat sledges and other parts of sledges. Chronologically, sledge runners extend from the Mesolithic Stone Age to historically documented times. This contribution discusses the types used during the Bronze Age. Skis are excluded from this article (on skis, see e.g. Taavitsainen et al. 2007: 64-75).

In Finland general transportation and its history have been treated by U. T. Sirelius (1919), Väinö Voionmaa (1933), Kustaa Vilkkuna (1934), T. I. Itkonen (1934) and Ilmari Manninen (1934), to name a few ethnologists and historians. Important for Finnish studies is also Gösta Berg's (1935) classic *Sledges and Wheeled Vehicles*.

Prehistoric sledge runners have been studied most actively by U. T. Sirelius (1918), T. I. Itkonen (1931, 1932, 1935, 1938, 1949) and Ville Luho (e.g. 1945, 1948, 1951, 1957). Later scholars, Aarne Kopisto (1964), Unto Salo (1965, 1967, 1984), Janne Vilkkuna (1986), Hannu Kotivuori (1996) and Timo Kuokkanen (1999, 2000) have made either reconstructions or proposals for

reconstructions of sledges based on runner finds. New radiocarbon dates of old finds as well as new material and the *Stand der Forschung* have also been presented and discussed (e.g. Seger 1988, 1991; Taavitsainen et al. 2007: 76-81).

The typology of Finnish runner finds has been constructed on the basis of the structural features of runners and ethnological analogies. The typology applied here follows on from the work of T. I. Itkonen (1938: 28) and Ville Luho (1949: 13) and it is supported by ¹⁴C dates. The general terminology of sledges is presented in Fig. 1.

There are three runner/sledge types in Finland that were, or could have been, used during the Bronze Age. They are presented in the following with particular focus on the so-called ridged type sledge and its reconstructions. As far as we know, the ridged type sledge has been found only in Finland.

The Kuusamo runner (KM/eh 20248). An interesting small runner was found in Kuusamo, central north-east Finland (Fig. 2). The date is 5690±110 BP (Hel-1159), cal 4690 BC (65.5%) 4440BC, 4420 (2.7%) 4400 BC (Reimer et al. 2004; Bronk Ramsey 1995, 2001). The fore part of the runner has a high curving shape (Fig. 3). The length of the runner is 83 cm. If the rear part has broken off, the missing part was apparently short. The width of the fore part is 14.2 cm, narrowing towards the rear. On the rear part there is a high ridge with two consecutive holes. The tip of the fore part may represent an animal and is quite thick, apparently to prevent splitting. Two parallel holes in the fore part were made for the binding which kept the fore part up.

The runner could be part of a small sledge. However, we are inclined to think that it is a sledge as such. Berg (1935: Plate II, fig. 3) has presented a small ethnographic runner that resembles the Kuusamo runner (Fig. 4). The Sami have used it to drag *kota* (tepee) poles. How was this done? We have not seen a description but we can easily present an interpretation. The slender ends of the poles are bound on both sides of the ridge, and the fore part of the runner prevents the bundle from sinking into snow. The runner must be upright all the time. A stick spreader connecting the outer poles would serve this function (Fig. 5). Although we lack Bronze Age finds, we can assume that similar small runners were used in the Finnish north and interior regions between the Stone Age and historical times.

The ski-sledge, also known as the Morjärv type sledge. An early ski-sledge runner was found in Salla, Eastern Lapland, Finland (Fig. 2). The preserved part of the runner has five bottom grooves and one post-hole (Fig. 6). On both sides of the post-hole there are holes for binding or inserting plugs. The length of the preserved parts is half a metre, but the original length was much greater. The Salla runner (KM/kt 8227) is the oldest dated ski-sledge runner in Finland, with a radiocarbon date of 4470±110 (Hel-1330), cal 3020BC (68.2%) 2920BC (Reimer et al. 2004; Bronk Ramsay 2005). Eero Naskali (1989: 12, 1999: 296, 301-302) has suggested that this find, identified by Itkonen (1938: 19-20) as a sledge runner, could be a ski. We do not agree with Naskali's identification but rather with Itkonen (on the criticism, see Kuokkanen 1999: 33-34; Taavitsainen et al. 2007: 65).

The function of the bottom grooves is clear, preventing the sledge from sliding sideways on inclined surfaces. Several other ski-sledge runner finds have a post-hole structure comparable to the Sodankylä runner (KM/kt 7534:1, Itkonen 1935: 11, Fig. 5C) as well as the runners from Lycksele, Nederkalix and Junsele in

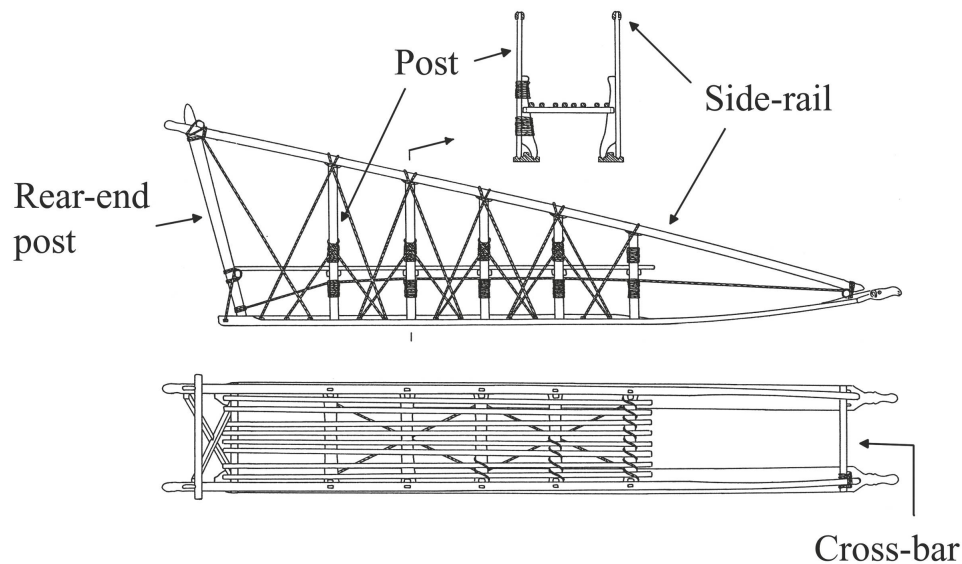


Fig. 1 The applied terminology (Berg 1935). Drawing: T. Kuokkanen.

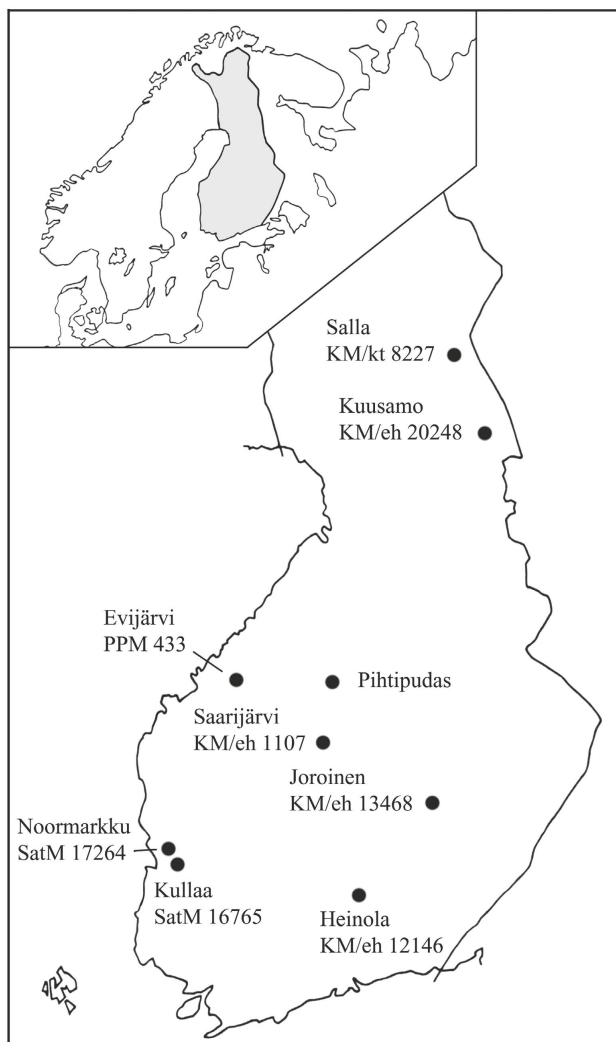


Fig. 2 The find locations of Salla, Kuusamo and ridged runner finds.

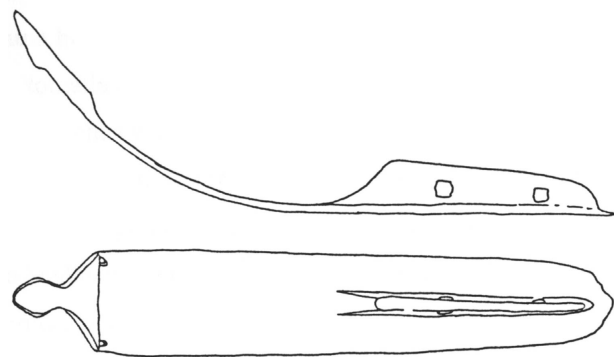


Fig. 3 Kuusamo runner (KM/eh 20248).

Sweden (Berg 1935: Figs 17, 18, 20). The eventual ^{14}C dates of these finds are unknown to the authors.

The next-oldest Finnish ski-sledge find is dated to the Bronze Age. The date for the Enontekiö runner (KM/kt 8153 Itkonen 1938: 22-24, k. 5B) is 2960 ± 80 (Hel-3925), cal 1300BC (68.2%) 1050 BC. The dated ski-sledge find from Laukaa is from the Early Iron Age, its calibrated age being 380 - 120 BC (Vilkuna 1986: 12). The age of the youngest ski-sledge find, from Saarijärvi, is cal AD 120 - 380 (Vilkuna 1986: 12). The authors know of 14 Finnish finds, 11 from Sweden and several from Russia (so-called Novgorod type). After this stage, a new sledge type, the boat sledge, apparently displaced the ski-sledge in Finland (Taavitsainen 1999: 312). In northern Russia and Siberia the ski-sledge remained in use until modern times.

The sledge of ridged type. The ridged runner is a continuation of the so-called central-grooved runner type of the Stone Age (Kuokkanen 1999, 2000). The structure of the ridged runner was simplified and improved. Besides runners, other parts of the sledge have been found. The ridged type has been dated from the

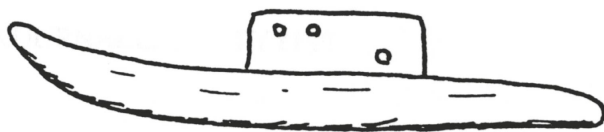


Fig. 4 Swedish tent-pole runner. Simplified drawing after Berg (1935: Plate II, fig. 3): T. Kuokkanen.



Fig. 5 Suggested interpretation of how tent-poles were drawn. Drawing: T. Kuokkanen.

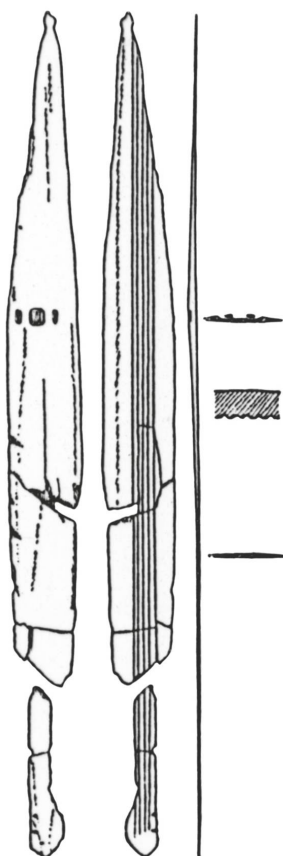


Fig. 6 The Salla ski-sledge runner (Itkonen 1938: 21, fig. 4B).

Late Stone Age to the Early Iron Age. Preceding central-grooved runners have been found in a wide region, from Sweden to the Ural Mountains. The ridged type, however, seems to be a local Finnish type.

Runners. At present, seven ridged runner finds are known (Table 1). All of these have been found in the southern and central parts of Finland (Fig. 2).

Three runners have been ¹⁴C-dated. The age of the Heinola runner (KM/eh 12146, 12923:1-2) is 3600±175 BP (Hel-659), cal 2200 BC (68.2%) 1650 BC. That of Noormarkku (SatM 17264; Salo 1967) is 3530±110BP (I-1921), 2020 BC (66.0%) 1730 BC and 1710 BC (2.2%) 1690 BC. The age of Kullaa (SatM 16765:1-5; Salo 1965) is 2390±160BP (Tx-125, A-254) = 770 BC (68.2%) 360 BC. The problem of the dates is not only their large uncertainties which cause problems in placing the runners in the Stone, Bronze or Iron Age. This is further hampered by the fact that we do not know how and where the dated samples were taken and whether they are from the outer or inner wood of the piece. Estimates of how many year rings were cut or carved away while constructing the sledge are also lacking. In any case, the dates are too old.

On the runner there is a ridge through which the binding holes were made. The forepart is flat like a board and its thickness is approximately the same as that of the ridged portion. The rear end has one or two holes for the rear-end posts. Only three runners have been preserved unbroken. The length of the Evijärvi runner (Fig. 7a) is 290 cm (Itkonen 1932: 60-62). The Heinola and Kullaa runners mentioned above are 288 cm and 213 cm long respectively. The breadth of the three runners is 10 – 13.3 cm. The other runners are more or less fragmentary. The central part of the Saarijärvi runner is missing if we assume that the discovered fore part and rear part belong to the same runner. The fore part of the Joroinen runner is missing almost completely. Only the fore part and a small portion of the ridge of the abovementioned Noormarkku runner have been preserved. The Pihtipudas runner has only a rear part 123 cm long.

Ridged runners have numerous and varying structural features (Fig. 8). This ridge is continuous except in the Heinola runner where it was made only at the location of the binding holes (Fig. 7b). As for the ridge of the Noormarkku runner, we know nothing. The post-holes were made on both sides of the ridge except in the Heinola runner where the ridge is missing at the location of the post-holes.

The board-like fore part is approximately one metre long. Two of runners display carved animal art in tips of the fore part: a bear's head in the Heinola runner and an elk's head in the Noormarkku runner.

Other parts of ridged sledges. The Kullaa and Joroinen finds were exceptional because other parts of the sledges were found together with the runners.

Two side-rails and a rear-end post were found with the Kullaa runner (Fig. 9). One of the side rails is complete and 252 cm long. Below the side-rail there is a groove resembling an inverted letter V. In the groove there are several long holes for the upper ends of the posts. The aft end of the side-rail has a large hole for the rear-end post. The other side rail is similar but fragmentary. The upper end of the rear-end post is curved and was situated in the rear hole of the side-rail when found.

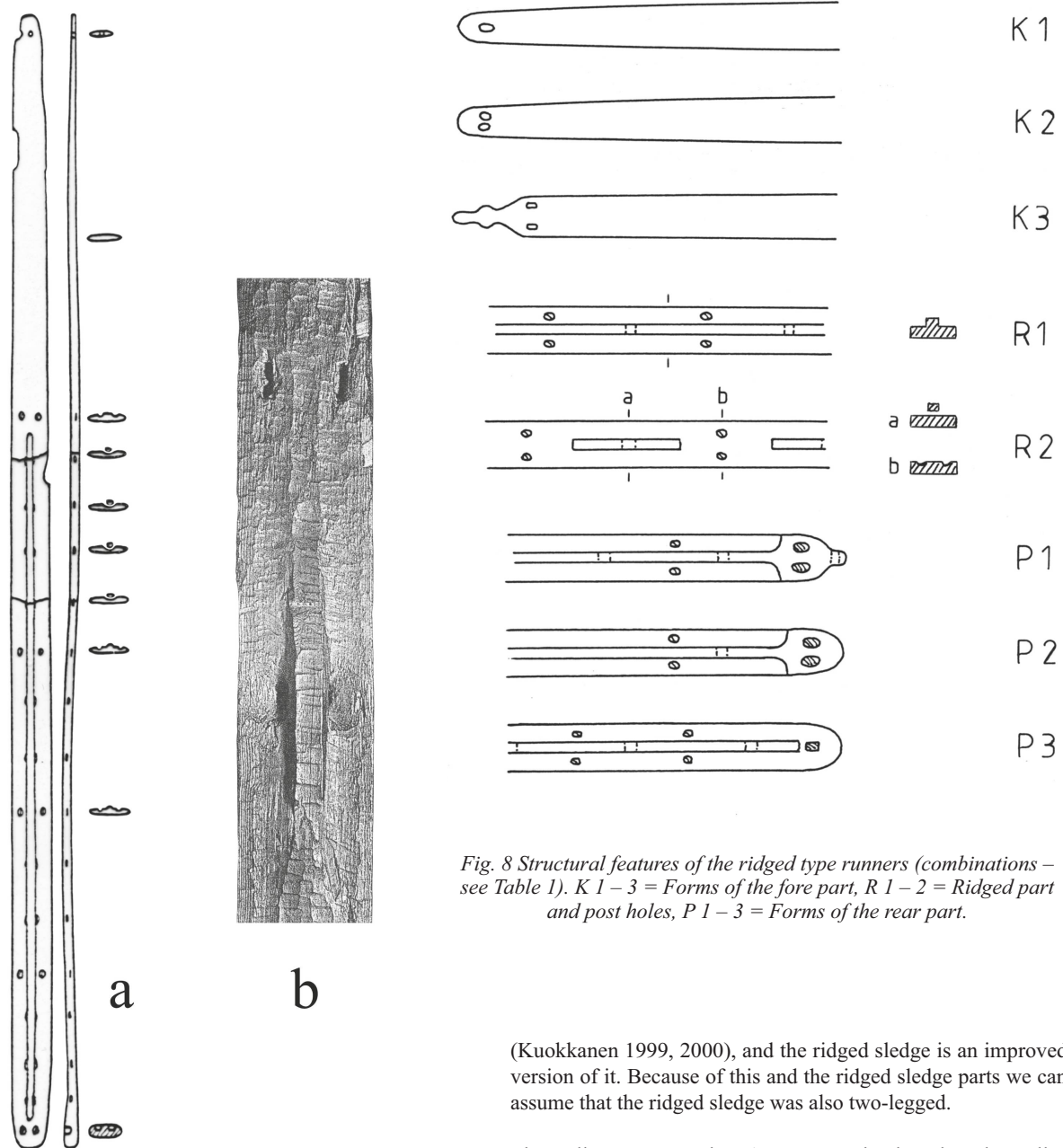


Fig. 7 a – The Evijärvi ridged runner (Itkonen 1932: 60, fig. 2B); b – The Heinola ridged runner (Edgren 1984: 54).

The Joroinen find included three fragments of side-rails. Two of them apparently belong to the same side-rail. The combined length is over 260 cm. The structure of the Joroinen side-rails is similar to the Kullaa side-rails (Fig. 10a). The side-rails were made of the wood of a young tree (Fig. 10b). The V-groove was made to support the posts, but it also prevents splitting when the wood dries.

Reconstructions of the ridged type sledges. The ridged runner type has no clear ethnographic counterparts. The preceding Stone Age central-grooved sledge type seems to have been two-legged

Fig. 8 Structural features of the ridged type runners (combinations – see Table 1). K 1 – 3 = Forms of the fore part, R 1 – 2 = Ridged part and post holes, P 1 – 3 = Forms of the rear part.

(Kuokkanen 1999, 2000), and the ridged sledge is an improved version of it. Because of this and the ridged sledge parts we can assume that the ridged sledge was also two-legged.

The Kullaa reconstruction. A reconstruction based on the Kullaa finds was made at the Satakunta Museum in 1963 (Salo 1965). The reconstruction greatly resembles the modern dog sledge (Fig. 11). The structure is functional except the cross-bar, which should be placed above the runners.

The Kurala reconstruction. A ridged reconstruction was made in the winter of 1991-92 in the archaeological experimental workshop at Kurala Kylämäki (part of the Turku Museum Centre). The sledge is based on the Kullaa and Joroinen finds with some modifications. The fore parts of the runners have elk heads after the Noormarkku find (Fig. 12).

Because of winter and scanty resources it was not possible to use curved wood or chosen branches. For this reason, the inner post structure is more complicated than that of the Kullaa reconstruction (Fig. 13b). There are more bindings. Instead of rawhide, sisal string had to be used.

Table 1 Salla, Kuusamo and ridged runners in Finland.

CATALOG NUMBER	PARISH	LENGTH OF COMPLETE RUNNER MM	BREATH MM	THICKNESS MM	STRUCTURAL FEATURES			14C DATE	± σ	LAB NO
					REAR	MIDDLE	FORE			
KM/eh 20248	Kuusamo	820	142					5690	110	Hel-1159
KM/kt 8227	Salla		136	18				4470	110	Hel-1330
RIDGED RUNNERS										
PHM 433	Evijärvi	2900	110	35	P2	R1	K1			
KM/eh 12146	Heinola	2880				R2	K3	3600	175	Hel-659
12923	1,2									
KM/eh 13468	1 - 5 Joroinen				P1	R1				
SatM 16765	1 - 5 Kullaa	2130	105	30	P3	R1	K2	2390	160	TX-125
SatM 17264	Noormarkku		102			R1 ?	K3	3530	110	I-1921
-	Pihtipudas				P2 ?	R1				
KM/eh 1107	Saarijärvi		115	35	P1	R1	K2			

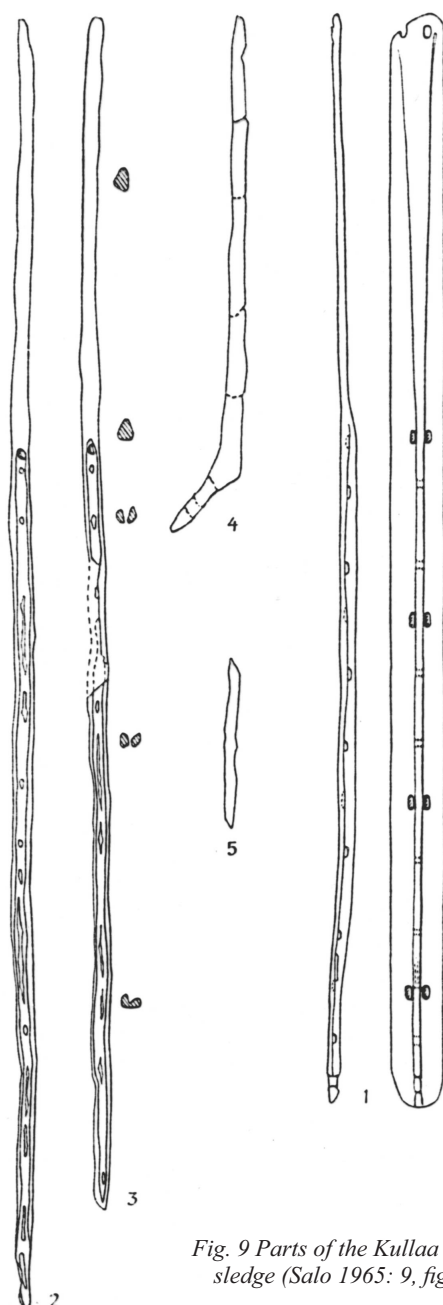


Fig. 9 Parts of the Kullaa ridged sledge (Salo 1965: 9, fig. 4).

In the Kullaa reconstruction the inner posts were branches which were bound together (Fig. 13a). A comparable structure could be made by using two bent wooden strakes bound together. The weight of the Kullaa reconstruction is 25 kg.

The Saarijärvi reconstruction. A new ridged sledge was made in 2000 for the Saarijärvi Museum. The inner post structure is simpler and the inner posts are slanted (Fig 13c) which makes the structure more rigid. The bindings were made of wet elk rawhide. Many fewer bindings were needed (Fig. 14). The straps tightened while drying.

Testing the ridged sledge reconstructions. We do not know if the Kullaa reconstruction has been tested, but it would be a working sledge with the cross-bar placed above the runners. The Kullaa reconstruction was tested in 1992 at the Saarijärvi Museum's Stone Age Village in Summassaari, central Finland. The test cargo was light, only a single elk hide. Because the total weight of the sledge and cargo was small, only two dogs were used to haul the sledge. A short test drive showed that the sledge was quite handy and resembled a modern cargo sledge. There were numerous lashings in the sledge and we can assume that during long trip those lashings would have loosened making their tightening necessary.

The Saarijärvi reconstruction was tested briefly at the Saarijärvi Museum's Stone Age Village in 2001. The structure of the sledge was much better than that of the Kullaa sledge.

Unfortunately, the testing of the different reconstructions under real conditions has been too superficial. We can, however, summarize and state that the structure of the Kullaa reconstruction is too complicated and its binding material is modern. The Kullaa and Saarijärvi reconstructions are probably closer to the originals. They seem to function better than the Kullaa reconstruction in natural conditions and their structures seem to bear more strain in the tests. However, we do not know yet how functional they will eventually be. Only thorough tests with full loads will provide the final word.

Conclusions: what lies behind the change of types?

As far as we know the ridged runners have been found only in Finland. Why? We must remind the reader that, naturally, it is possible that ridged runners outside Finland may still remain to

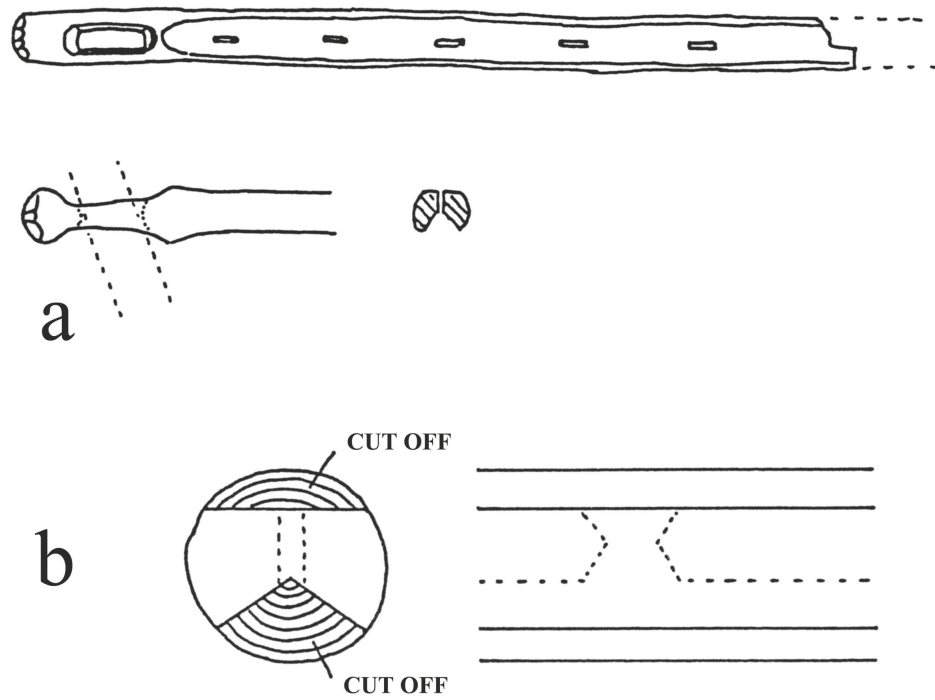


Fig. 10 Side-rail structure of the Joroinen ridged sledge. Drawing: T. Kuokkanen.

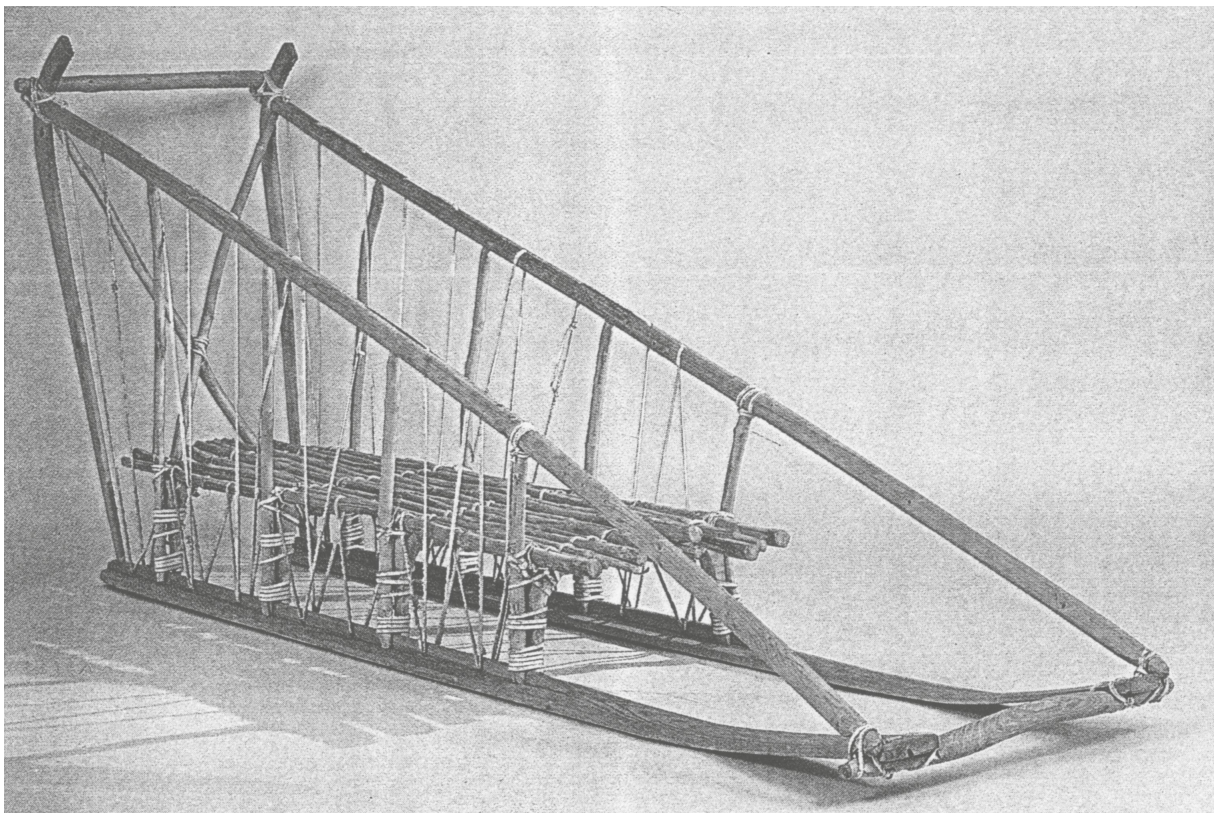


Fig. 11 The Kullaa reconstruction (Salo 1984: 178).

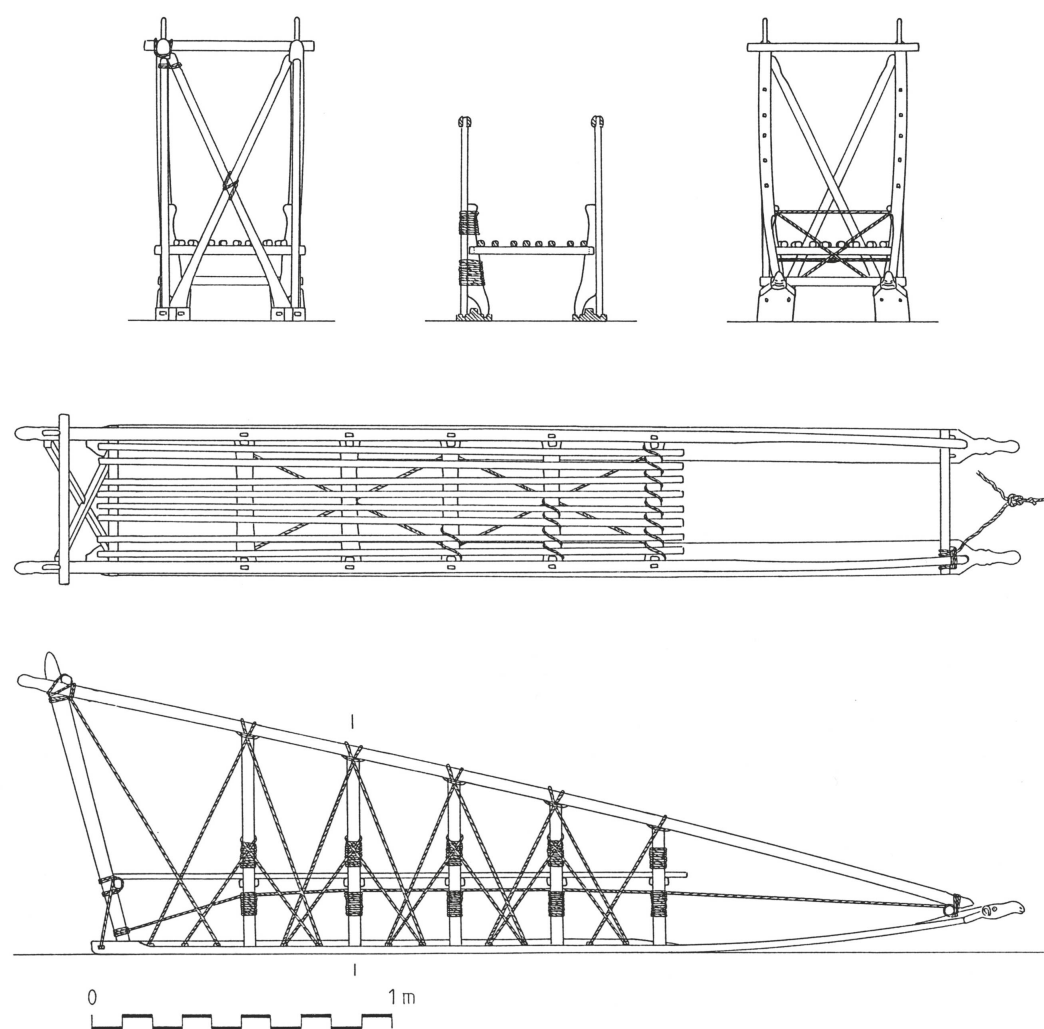


Fig. 12 The Kurala reconstruction as tested at Saarijärvi. Drawing T. Kuokkanen.

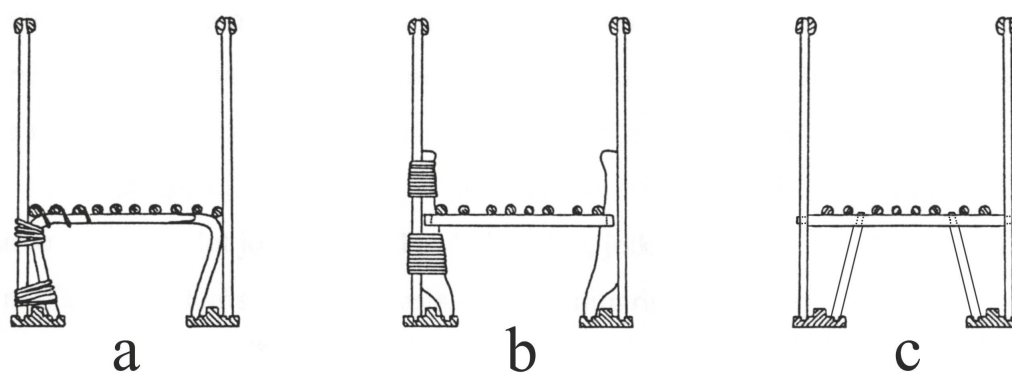


Fig. 13 Post structure of the ridged sledge reconstructions. a – The Kullaa reconstruction, b – The Kurala reconstruction and c – The Saarijärvi reconstruction. Drawing: T. Kuokkanen.



Fig. 14 The Saarijärvi reconstruction at the Saarijärvi Museum's Stone Age village at Summassaari, central Finland (Saarijärvi Museum).

be found. On the other hand, ridged sledges may have been a local tradition. In Russia, the ski-sledge apparently replaced the earlier Stone Age central-grooved sledge. In Sweden there are some interesting runner finds: two runners from Hälsingland (Oldeberg 1974, Hälsingland 2879 & 2881) and one from Jämtland (Oldeberg 1974, Jämtland 2891). The runners somewhat resemble central-grooved runners but are apparently their own type; in particular Hälsingland 2882 and Jämtland 2891 look similar (Oldeberg 1974). Both deserve a closer look in future work.

The ridged sledge is quite rigid. The driver can push the sledge in difficult terrain and it is not necessary to fasten the cargo. On the other hand, the sledge must be hauled by a man or dogs. The driver cannot use skis or snow shoes, nor can he stand on the runners, but has to walk behind the sledge. Hands on the handle bar and the cargo tend to press down the rear of the sledge. This raises the fore part slightly. It seems probable that the fore parts were quite low, making the sledge glide easily in soft snow. The ridged sledge was perhaps used for long journeys, seal-hunting trips and winter net fishing where large cargo capacity was needed. In immediate surroundings a small ski-sledge was more practical.

Why did the ridged sledge disappear? We are inclined to think that the ski-sledge replaced it. The ski-sledge is a versatile all-round sledge and it is easier to make. The smaller ski-sledge is good for hunting and fishing activities, while the larger one is good for longer journeys.

We can consider the example an Iron Age boat type known as the Mekrijärvi type boat. It has been suggested that the expansion

of commerce during the Viking Age demanded a more effective means to transport wilderness products to middlemen and the markets. The buoyancy of the boats used in the lakes and rivers of the interior of Finland had to increase. The time was ripe for a new boat type consisting of five main parts: a hollowed-out keel timber that was spread out, a V-shaped hollowed-out fore and aft staves, and two side strakes which add considerably to the buoyancy of the boat type. The construction was strengthened with ribs fastened to the keel timber by lashing through 'ears' left on the keel. This type, based on stern and sternpost construction, is regarded as an intermediary stage in the development of the clinker-built boat from the dug-out to the stave-built type with several clinker-built strakes (Taavitsainen 1998: 153, note 1; Taavitsainen et al. 2007: 52-54 and references).

The development also affected the means of Iron Age winter transport. The clinker technique used in the Mekrijärvi boats was naturally applied to winter vehicles, resulting in the *ahkio* sledge. The Viking Age is the most probable date for the oldest representatives of this Lapp sledge (Taavitsainen 1999: 312).

Owing to the uncertainties of the few radiocarbon dates and the lack of further dating we cannot discuss the development and changes of the Bronze Age sledge types in more detail. Activity in the circumpolar regions increased during the Bronze Age, during the 'heroic age of travels and transformations', apparently in connection with a more efficient linking of the circumpolar areas with the networks of 'international' trade of the time. Increased demand for the products of the taiga and tundra regions required the more efficient transport of larger quantities of products than

previously. It became necessary to construct more serviceable winter transport equipment. It is to be anticipated that when more detailed study of sledges with new ¹⁴C dates will emerge, some of the changes to be discovered in winter transport equipment are to be connected with the development of Bronze Age trading networks and needs associated with this web of interconnectivity.

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Abbreviations

KM/eh = National Museum of Finland/prehistoric collections
KM/kt = National Museum of Finland/ethnographic collections
SatM = Satakunta Museum

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TRAVEL AND TRANSMISSION

BOUNDARIES, FLOWS AND CONNECTIVITIES: MOBILITY AND STASIS IN THE BRONZE AGE

Michael Rowlands and Johan Ling

Abstract: In this paper we argue for the notion of maritime position and amber as Nordic comparative advantage in the 'international' metal trade networks. We will also argue for the hypothesis that certain social relations, interactions environments and social values created regional boundaries and comparative advantage to stimulate direction and velocity in the mobility of people, things and materials. Thus Bronze Age materials, boundaries, connectivities suggest 'worlds in creolization' and the hybridity of practice

Keywords: Boundaries, flows, connectivities, metal, amber, comparative advantage, lead isotopes

Introduction

What is needed is a more explicit theoretical and interpretative strategy allowing us to trace and dissolve processes of interaction at a more fine grained level of analysis (Kristiansen and Larsson 2005:7)

In this contribution we will be taking up the challenge given to us in the quote by Kristiansen & Larsson to come up with further advances on his seminal work on prehistoric interaction in the Bronze Age. As he would argue we are beyond supine discussions of autonomy versus diffusion yet we still recognize the paradox that increasing evidence of the scale of mobility in the Bronze Age, including both movements of people and things, is matched by rival evidence of regional groupings displaying considerable consistencies over long periods of time (Fig. 1). The obvious conclusion to make is that the two phenomena are related. But conceptually this is not the way things are going.

Detailed analysis of migrations, object diasporas and

connectivities have lead to a much better understanding of the origins of European diversity (cf. Van Dommelen & Knapp 2010). The impact of mobility suggests much greater evidence of hybrid practices within 'local populations', cosmopolitanism and absence of fixed or primordial identities. The emphasis is on the a-priori nature of connectivities for understanding locality. The latter is interpreted either as forms of resistances to 'taking the outside in' or as the assertion of difference to compete for access to flows of materials, people and things. An alternative view would stress the primacy of locality as a means of controlling flows in materials, people and things. Long term continuities of regional identities would suggest that value was created through asserting difference on which the quality of labour or the intrinsic nature of skill or ideas of magical properties of materials could be based as the exclusive possession of regional groups. Whilst the focus on mobility makes the argument for flows and interaction, the alternative embeds value in differentiation and the potential for unequal exchange (Appadurai 1996; Chapman 2008). In the past an emphasis on flows and connectivities led to studies of networks, alliances and interactions and assumptions about widespread

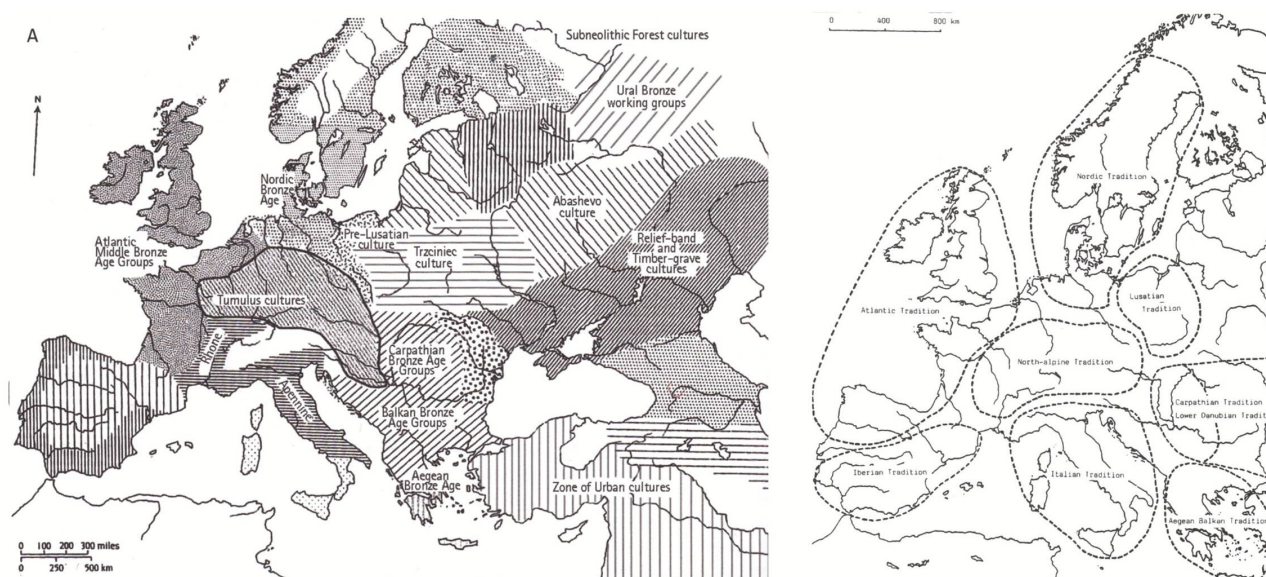


Fig. 1 Regional groupings, boundaries in BA Europe, left EBA to MBA according to Sherratt in Cunliffe (1998), right LBA after Kristiansen (1998).

homogeneities in style areas. Most scholars have argued that copper was imported to Scandinavia from Central Europe (Montelius 1888; Sprockhoff 1931; Thrane 1975; Liversage & Northover 1998; Kristiansen 1988). However, recent lead isotopes on Nordic Bronze Age artefacts strongly challenge this traditional diffusionistic picture and show instead new and alternative routes for the flow of metal (Ling et al. 2013). Revitalized by separation from the language of diffusion of images and objects, Bronze Age connectivity and interaction suggests instead 'worlds in creolization' and the hybridity of practice (Bhabha 1994; Hannerz 1996). Locality as a source of value would alternatively stress that whilst groups may have similarities in their cosmologies, it is the focus on the assertion of difference rather than what they share that promotes 'comparative advantage'.

Comparative Advantage & Value

A comparative advantage rule implies only the rationality of specializing in something to enter exchange rather than trying to be self-sufficient in production (Ricardo 1871). Linked to modern ideas of labour value and skill, advantage is taken of environmental differences and transmitted knowledge to specialize and create a surplus (Marx 1973). In the case of metals and amber we should look for a theory of value that would link environmental differences in sources of gold/tin/amber/copper with the exercise of ritual power, i.e. comparative advantage based on specialization in supplying materials that have both high economic and symbolic value (e.g. Kristiansen 2012, in press) suggests that amber in the Bronze Age had similar if not a higher rate of exchange than gold. Herodotus (1992) claimed that tin and amber were the most valuable things in Greece during the Bronze Age. Thus, the values linking Bronze Age ideology/cosmology to materials seems to be integrated through such transmissions and are also linked to changes in ideas of personhood, warriorhood, burial and possession of weapons (Kristiansen & Larsson 2005).

Boundaries, flows and regional comparative advantages are therefore connected. But we can assume the value generated will not be understood through their functional relationship but as a product of long term historical process. From the beginning of the European Bronze Age we have evidence of the impact of trade in metals on mobility in persons and things (Kristiansen 1998; Harding 2000). Also, the rapid emergence of boundaries in the appearance of distinctive patterns of metalwork, their contexts in burial rites and co-existence with other forms of material culture that can be broadly associated with 'socio ritual' practices (Kristiansen 2005; Vandkilde 2007). The hypothesis that certain social-relations, environments and values create comparative advantage to stimulate direction and velocity in the mobility of persons, things and materials would seem to be a worthwhile starting point for our discussion.

To be able to understand what is specific about a certain form of boundary persistence during the Bronze Age, we must know the specific social conditions and relations of material life (Marx 1973: 63). Adopting Marx's social perspective accordingly underscores the notion that it is social relations (re-production) and cosmology (foundations of cosmic order) that are of importance in the creation of ideology and boundaries (cf. Kristiansen 2005). Furthermore, Marx's concept of fetishism could be useful when considering the interaction of valuable materials such as metal and amber. In line with the idea that the concept of fetish also stems from the experience of an encounter (cf. Apter & Pietz 1993) this theory also suggests that comparative advantage of produced things has less to do with their real labour value and more to

do with their natural form. This is because the social processes involved in the act of production generate an illusion of value that emerges through their alienation in exchange which does not correspond to the concrete value of their production; hence the object becomes a fetish (Marx 1973: 39).

In terms of the materials that seem to have been regarded as precious things during the Bronze Age such as metals and amber, the illusory 'social' value behind these materials was then generated through demanding social labours (cf. Taussig 1980; Kristiansen 1984).

Boundaries and flows

The very idea of bounded groups has become an avoided category in both Anthropology and Archaeology. Condemned as a product of a normative definition of culture, the idea that boundaries assume the presence of closed, homogenous groups has led to various re-definitions of ethnicity as a way of discussing barriers that may be porous, allowing people/things to pass through them or to define hollow categories lacking any particular cultural content. A key influence is Fredrik Barth's (1969) introduction to *Ethnic Groups and Boundaries*, in which he makes two essential points. First, that boundaries persist despite flows of persons and things across them. Secondly, that maintaining ethnic distinctions does not imply an absence of social interaction. Quite the contrary, social interaction forms the basis on which social systems are built. The principle on which these statements were based relates back to Edmund Leach's demonstration in *Political Systems of Highland Burma*, that no single ethnic group persists apart from belonging to a larger field of inter-ethnic contact and interdependence (Barth 1969:10; Leach 1964). Instead of cultural diversity being a product of each group as a culture-bearing unit developing separately through adapting to unique social and ecological environments, difference was conceived as a product of an active engagement with Others, establishing sets of rules with which to order social encounters.

By questioning the idea that groups emerge separately over time and only encounter each other in a rather fortuitous manner, Barth required us 'to ask ourselves what is needed to make ethnic distinctions emerge in an area' which, as forms of self identification would, as in the case of his own studies of Swat Pathan, cross-cut political and economic units (Barth 1969:17, 24).

At this point in Barth's argument, the focus on ethnicity as self conscious forms of identification became questionable since one of his main findings concerned the ability of individuals to cross boundaries and self-consciously change identity. Boundary maintenance therefore persists regardless of the actions of particular carriers. Persistence of cultural boundaries beyond the self conscious identity of individuals was central to the study of culture areas, see for example Adolf Bastian and, in particular, the writings of Marcel Mauss on civilization. As Mauss (2006) defined it, a civilization consists of 'those social phenomena which are common to several societies', 'more or less related to each other', by lasting contact 'through some permanent intermediaries, or through relationships from common descent' (Mauss 2006: 61). A civilization is, then, 'a family of societies' (Mauss 2006: 62). He emphasized that phenomena exist that are not limited to a specific society or culture. Instead they are phenomena common to a larger or smaller group of societies and cultures. These are phenomena – particularly material practices – that are what he called 'fit to travel'. They overflow boundaries or do not have fixed boundaries –

The history of civilisation, from the point of view that concerns us, is the history of the circulation between societies of the various goods and achievements of each. ... Societies live by borrowing from each other, but they define themselves rather by the refusal of that borrowing than by its acceptance (Mauss 2006: 242-251)

What Barth called ‘complex poly-ethnic systems, at the time avoiding the pejorative implications of a term like civilization’, depends on a high degree of stability in core cultural values maintaining boundaries in order to facilitate flows of persons, images and things across them. Yet such flows seem to create conditions of shared diversity without threatening their persistence. For Barth such blurred distinctions could be recognized in many ethnographic situations and there is no question that he saw this observation as having important moral and ethical consequences for living in modernity. But persistence of boundaries in conditions of flows of persons and things is a long term feature of entities that are scarcely ethnic in character and can be approximately identified with entities existing in long-term historical pasts that parallel Mauss’s concept of civilization.

Our reliance on the idea that boundaries are in some sense related to control overflows of persons and things will be disturbed by evidence that such flows may not only be prior to the existence of boundaries but in some sense constitutive of them. This is a ‘chicken and the egg’ question that can be resolved only by establishing the value constituting the specific form of comparative advantage in practice. To pursue this question within the broader arguments initiated by Kristian, we shall first summarize the evidence of metal trade in Bronze Age Europe and in particular its relation to the constitution of the Nordic Bronze Age. Whilst there is nothing new about long distance flows and mobility of persons and things at the beginning of the Bronze Age, the specific combinations of metals and amber create certain patterns and boundaries from the beginnings of their circulation that with transformations and changes in content, remain consistent throughout the Bronze Age. Three general points will be important for our specific arguments about comparative advantage and value in the constitution of the Nordic Bronze Age. First, that a combination of metals - copper, tin and gold - are articulated with the flow of amber at the beginning of this sequence (Harding 1990; Beck & Shennan 1991). Secondly, supplies of metals and amber are of limited origin and spread over large areas (Kristiansen 1998). Thirdly, the material forms and images produced with them are localized to create distinctive variants (Fig. 1).

Amber and metal: flows of metal into Scandinavia

Most scholars agree upon the fact that most of the metal was refined and alloyed into regional forms in Scandinavia, from about 1700 BC and onwards (Montelius 1888; Thrane 1975; Kristiansen & Larsson 2005; Vandkilde 1996). This indicates that most of the metal reached Scandinavia in the shape of ingots. However, several metal artefacts reached Scandinavia as finished forms, but these are few in comparison (Montelius 1888; Baudou 1960; Vandkilde 1996; Kristiansen 1998).

The Scandinavian Bronze Age objects seem to have been based on copper from a few continental sources, and these changed over time (Ling et al. 2013). Most of the copper in the analysed artefacts from Sweden seem to have been channelled through a western ‘maritime route’ following old beaker networks using copper from the western Mediterranean and the British Isles (cf. Cunliffe 2008). However, much copper was also ‘brought’ from an eastern

route, i.e. from North Tyrol and the eastern Mediterranean (Ling et al. in prep). Thus a new complex picture of flows of forms and raw materials emerges which has to be considered (Fig. 2). This means that prevailing theories of alliances, networks, boundaries and interactions have to be revised. Objects dated to 2000-1500 BC, such as shaft-hole axes, flange axes and daggers mainly match ores in the North Tyrol, Cyprus and east Portugal, while flange hilted swords, spearheads and other objects dated to 1500-1100 BC tie up neatly with ores in Sardinia and/or south-western Iberia. Most objects from the Late Bronze Age correlate with ores in south-western Iberia and ores in North Tyrol (Ling et al. in prep.).

Interestingly enough, there are no isotopic matches with ores from areas that traditionally have been seen as the main import areas for copper to Scandinavia (Vandkilde 1996; Thrane 1975; Kristiansen 1998) such as the Carpathian basin or Germany (Ling et al. in prep.). However, these areas have clearly inspired Scandinavia and vice versa in terms of metal forms, housing, cosmopolitical codes and burial customs. A striking evidence of this interaction is the similarities between the full hilted sword from Central Europe and the Nordic ones, a fact stressed a number of times by Kristiansen (1998, 2002). In this context should also the strong case with amber and swords relations and connections in the Middle Bronze Age, between Central Europe and the Nordic sphere be stressed (Kristiansen 1998, 2002).

Thus, the interaction between Scandinavia and Central Europe in the Bronze Age was both intense and stable. The reason for this might be that it was more based on staple finance products such as cattle, textile and agrarian products (cf. Earle & Kristiansen 2010; Bergerbrant 2007). This interaction would have created a foundation for long lasting social relations such as martial and marriage alliances and could become imbricated in metal forms and burial rites. Even if wealth finance such as metals and ambers were highly important and governed this system, the interaction of staple finance products would have constituted the main feature.

But what about the interactive ties between Scandinavia, the Atlantic Europe and the western Mediterranean world? Could this be seen in the light of a network that primarily was based on ‘wealth finance’, on trade with different active mining regions in Europe in exchange for amber from the shores of the north? This maritime network was much more fragile due to alternations in the mining activity and the seasonal collection of amber. The interaction between these remote regions was therefore not so intense and the Scandinavian sphere was therefore not directly influenced by this western network in terms of metal forms, burial rites and housing. Initially, however, when this western maritime network was established metal forms enters Scandinavia from this sphere. From the Wessex period there are finds of 30 objects of typical British and Irish types in Scandinavia (Butler 1963; Vandkilde 1996; Oldeberg 1974). However, during the Middle Bronze Age (1500-1300 BC) Scandinavia turned away from ‘Atlantic forms’ in favour of Central European ones. At the same time, paradoxically, the isotopic evidence indicates that the Scandinavians and the British shared copper ores, foremost from the western Mediterranean sources, but also from ores from the British Isles (Ling et al. in prep). In terms of the interaction of forms this may not seem logical, but it makes sense if we consider the material connections that existed between the British Isles, Scandinavia and the Mediterranean world during the Bronze Age (Harding 1984; Beck & Shennan 1991; Kristiansen & Larsson 2005). As Bergerbrant has shown, we also have evidence of objects of both British and Scandinavian origin from the same Lüneburg region during the Middle Bronze Age

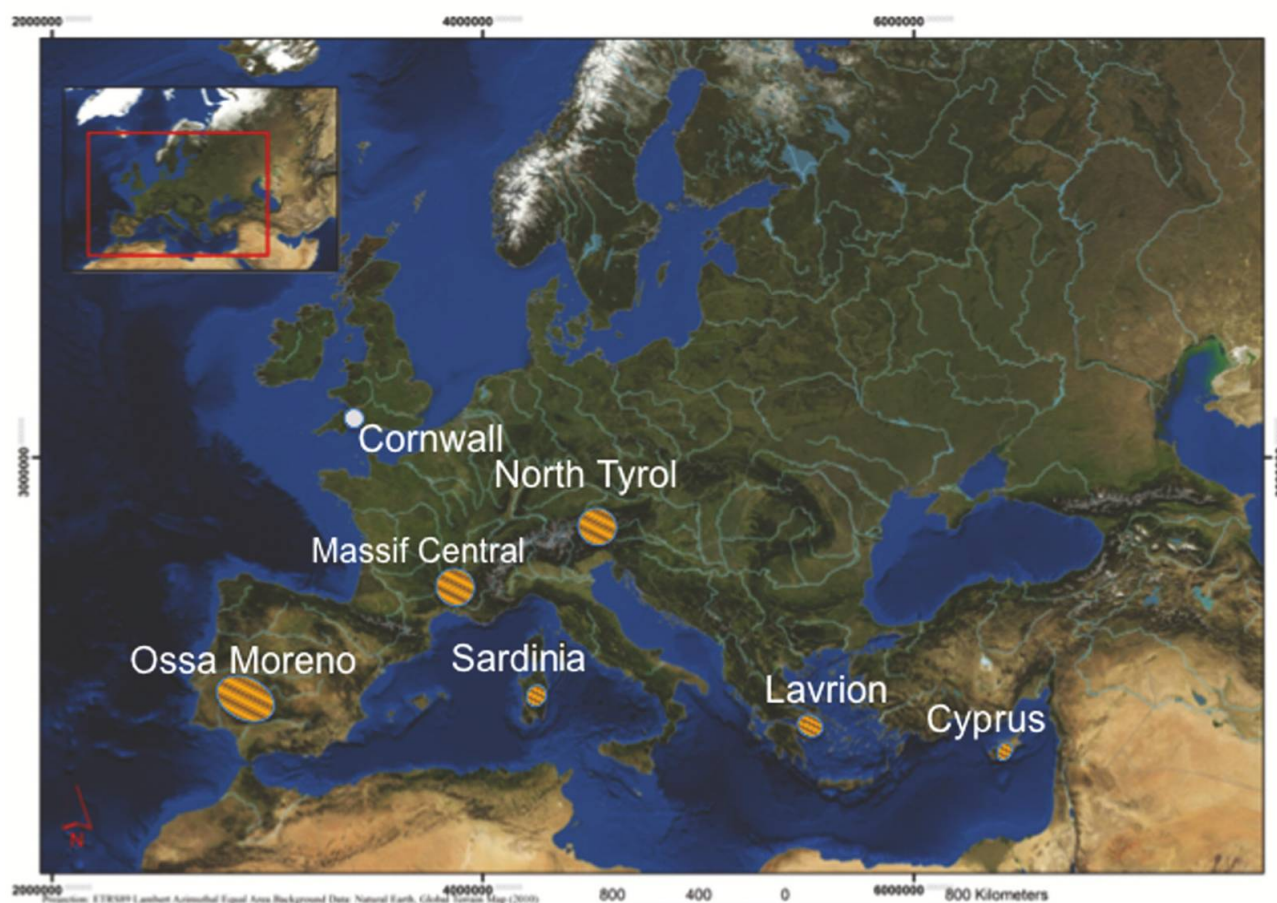


Fig. 2 The mining districts in Europe that match Swedish BA artefacts in terms of lead isotopes.

(Bergerbrant 2007). Moreover, it also makes sense if we choose to follow Mauss' argument on society and boundaries, and that certain features of borrowing, acceptance and refusal from other societies create the specific regional societal boundaries (Fig. 3). For instance, in terms of forms there are no similarities at all between the Scandinavian swords and the ones from the Atlantic zone during the Middle Bronze Age. Instead, Scandinavian forms are shared with southern Germany, yet the Atlantic and the Scandinavian swords are made from metal from the same sources in the western Mediterranean area (Ling et al. in prep.; cf. Rohl & Needham 1998; Ling et al. 2013). The acceptance of metal from one area and the refusal of forms from yet another may be regarded as a typical strategy to maintain independence and thereby define a certain geopolitical boundary during the Bronze Age (Fig. 1). The full hilted swords of Nordic type could then have been charged with symbolic value from several remote geopolitical spheres; forms from Central Europe, and metal from the Mediterranean or Atlantic Europe (Kristiansen 1998; Schauer 1981; Quillfeldt 1995). The example of the Nordic sword is in line with the idea of comparative advantage where independent, yet hybrid, features and materials constitute crucial elements for the creation and maintenance of regional boundaries. Other important elements in the regional articulations of the Bronze Age boundaries in Europe are cosmopolitical codes (Fig. 4). These hybrid features may be regarded as exclusive 'social codes' or 'core values' shared over a large part of Europe that were confined in display to certain social strata, groups or social actors. Different articulations and configurations of these codes are found in different media including rock art, metals, pottery and graves in

Bronze Age Europe (Treherne 1995; Harrison 2004; Coles 2005; Kristiansen & Larsson 2005). In Scandinavia these codes, we believe, were articulated and most vividly expressed in rock art showing representations of armed humans associated with ships.

The Nordic Maritime Comparative Advantage (NMCA)

Several ritual features can be recognized in rock art, graves and bronzes, illustrating the significance of the sea for Scandinavia during the Bronze Age (Fig. 5, cf. Kaul 1998; Ling 2008). A maritime ideology was one of the major cornerstones for the 'NMCA' boundary, grounded in a maritime reality with an emphasis on building and crewing ships for maritime trading/raiding and warfare. Thus the formation of new maritime institutions (e.g. Kristiansen 2004; Kristiansen & Larsson 2005; Needham 2009) constituted a crucial feature for the societies in the coastal areas of the Nordic Bronze Age. The praxis of pecking ships into the rocks in Scandinavia could have served to make this maritime ideology/boundary more dominant.

Earl and Kristiansen have convincingly stressed that with the new role of wealth exchange, the development of boat technology and maritime skills were of major importance for the rise of regional chiefdoms in Scandinavia during the Bronze Age (Earl & Kristiansen 2010: 226-230).

Southern Scandinavia and especially Denmark had a very strategic and favourable maritime position in Northern Europe and could thereby have controlled the flow and distribution of metal into



Fig. 3 The Nordic boundary as a fusion of forms and metal flows in the LBA. The yellow polygons denote the 'maritime' Atlantic network confined to metal sources and ambers and Cosmopolitical codes. The black polygon shows the more intense 'terrestrial' exchange system with Central Europe based on staple finance, martial and marriage alliances shared metal forms, sources and burial customs. Red circles denote the mining districts in Europe with matching isotopes with Scandinavian artefacts.

Scandinavia by monitoring the traffic from both the North Sea and the Baltic. For instance all metal imported from the west had to pass Jutland. Knowing that most of analysed EBA metal in Sweden derived from western sources in Europe (Ling et al. 2013) at this time, (i.e. British Isles and the western Mediterranean), the rise of power in northern Jutland makes perfectly good sense.

Moreover, the Danish isles also held a favourable position in terms of metal supply through the riverine routes of the Oder and Vistula and overland routes from Central Europe.

Moreover, the expansion of the Nordic region towards the Baltic area during the Late Bronze Age must be seen as a typical NMCA strategy to control the amber-rich coast in Poland and northern Germany (Fig. 6).

One of the major reasons for Scandinavia's success, during the Bronze Age, must have been the natural occurrence of amber in this region. All evidence indicates that the Baltic amber was highly valued during the Bronze Age (Jensen 1981; Kristiansen 1998; Beck and Shennan 1991; Cunliffe 2008). Thus, according to our hypothesis, the Baltic amber may have constituted the key component in the NMCA strategy (Fig. 7). For instance, the

amber in Jutland, the Danish isles and Scania has evidently been systematically collected during the Bronze Age (Jensen 1982; Earl & Kristinsen 2010). From being abundant in graves from the Neolithic, it almost disappears from the Scandinavian burial scene during the Bronze Age and at the same time amber

became a common feature in prestige contexts in Europe, not least the Mediterranean world. Beck and Shennan conclude that there are some important features about amber for the Nordic zone during the Bronze Age:

The lack of amber depositions in Bronze Age Denmark arises out of this situation. It is not simply that it was all being exported south to meet the demand elsewhere. Rather, it was no use as a valuable in Denmark because it could be obtained too easily: local control of its distribution, an important criterion of a prestige valuable, was not possible. The exchange of amber southwards meant that it was funnelled into the control of those involved in metal exchange, who indeed depended on it as an item to offer in exchange. The circulation of amber, rather than its deposition, was what mattered in southern Scandinavia

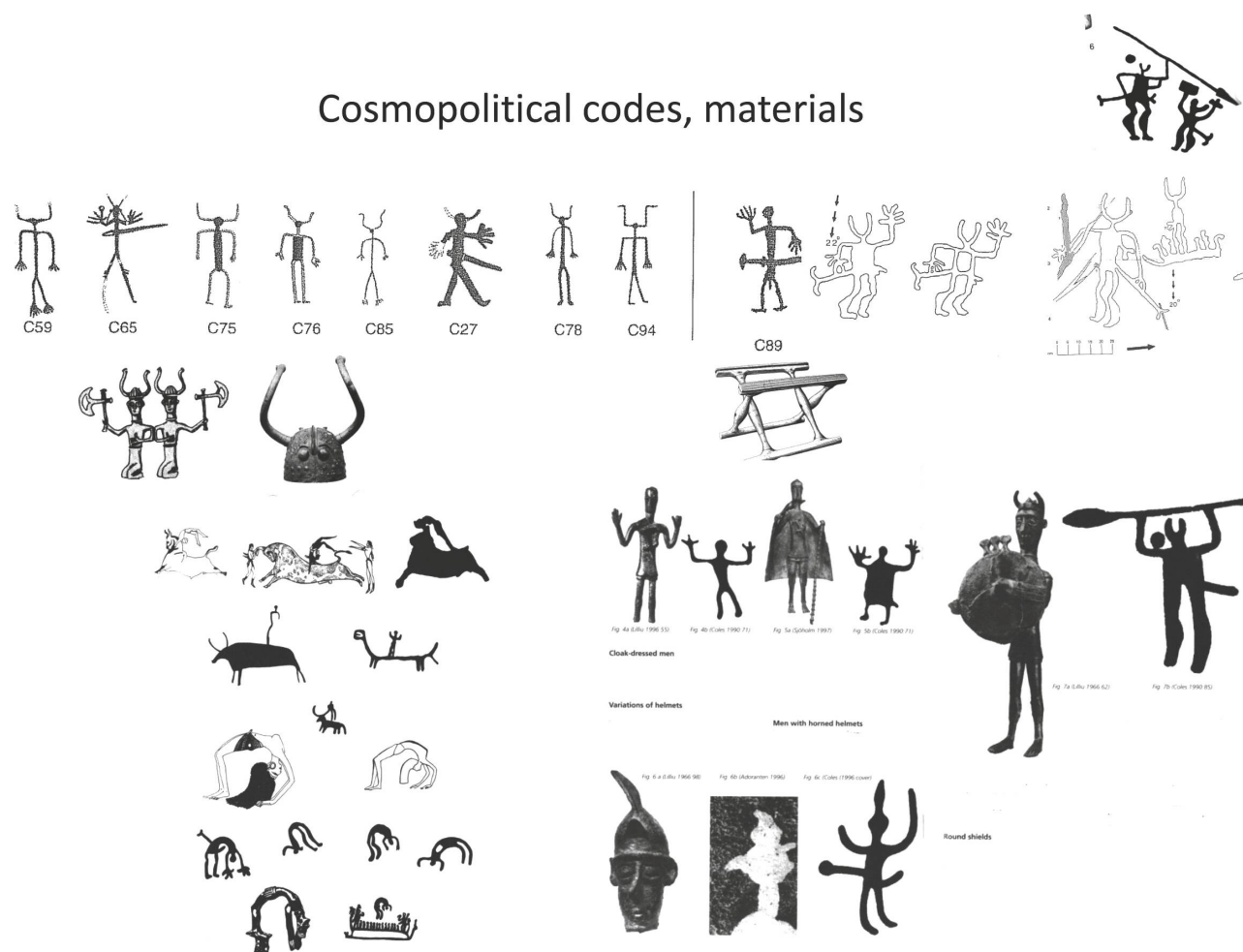


Fig. 4 Cosmopolitical codes from different parts of BA Europe. At the top warriors in Spanish rock art marked with C Swedish rock art to the left with, no marks. Mid-section: Horned figurines from Grevesvænge, the horned helmet from Viskø, and the camp stool from Guldhøj, all from Denmark. Bottom left: Acrobats and bulls from the Mycenaean world and from Scandinavian rock art (after Winter 2002). Bottom right: Warriors on Nuragic figurine compared with Scandinavian rock art (after Sjöholm 2003).

whereas with metal the reverse was the case (Beck & Shennan 1991: 141).

One of the strongest arguments that amber was traded with metal is the finding of Baltic amber roughly in the same regions as the Bronze Age mines (Shennan 1998; Beck & Shennan 1991; Murillo-Barros & Martín-Torres 2012). Moreover, it is these ore-bearing regions that show matching isotopes with Scandinavian artefacts (Ling et al. in prep.; cf. Fig. 8). This implies that Baltic amber was used as a means to attract the flow of the precious metal to the Nordic regions. Thus ambers and maritime networks seem to have been a crucial feature for NCMA during the Bronze Age.

Connections between Scandinavia, the British Isles and the Mediterranean world

Several scholars have stressed that Scandinavia was connected to the Mediterranean world via Central Europe during the Bronze Age and this route was indeed highly important (Thrane 1975, 1990; Kristiansen & Larsson 2005). However, the material, not least the isotopic evidence, points to a more complex picture with a stress on an alternative western 'maritime' route.

Nevertheless, several Scandinavian features from the Bronze Age have been inspired by the Mediterranean such as the folding stools found in Danish mounds (Thrane 1990; Kristiansen & Larsson 2005), horse drawn chariots in rock art and on metal objects (Kristiansen & Larsson 2005) and shapes of ships in rock art and on metal objects (Kaul 1998; Kristiansen & Larsson 2005). There are also some striking similarities between the horned warriors in Extremadura rock art, Nuragic figurines from Sardinia and the horned warriors depicted on the rock art in west Sweden and the horned bronze figurines from Grevesvænge in Denmark (Fig. 4) (Harrison 2004; Coles 2005; Vandkilde, this volume). Even if these horned anthropomorphs have been produced in remote regions during the Bronze Age, they derive from more or less the same epoch, 1100-800 BC (Harrison 2004; Coles 2005; Vandkilde, this volume) and bear witness to a vivid interaction of cosmopolitical codes.

Up to now, most of the discussion dealing with interaction between Scandinavia and the Mediterranean world has been based on forms and types and not so much content (Kristiansen & Larsson 2005). However, there are now two types of material evidence (metal and amber) allowing, on more scientific grounds, the argument that the evidence for this interaction was based on the content, not only the

"Maritime" Ideology

Maritime agency

"Maritime" Praxis

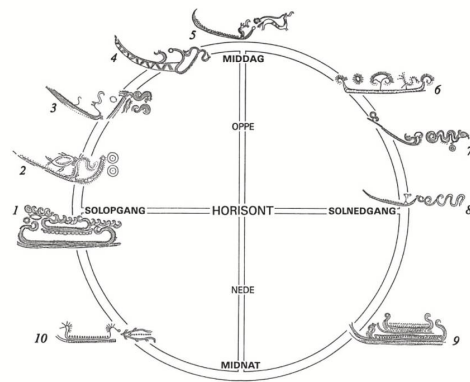


Fig. 5 The Nordic Maritime ideology, grounded in real praxis, so expressed in rock art, graves and bronze items.

forms. Thus, Scandinavian objects dated to 1700-1500 BC match ores from Cyprus and Lavrion in the eastern Mediterranean. The first major extraction of copper in Sardinia starts about 1300 BC (Stos- Gale et al. 1995; Stos-Gale and Gale 2010); interestingly enough, all flange-hilted swords from Sweden dated to period III-IV (1300-900 BC) match with ores from Sardinia. One of the most intriguing of these matches is the one between the two Herzprung shields dated to about 1100-800 BC (Uckelmann 2011) found in west Sweden and with ores from the Ossa Morena massif, located in the Extremadura region in south-west Spain. In fact, in the same region, there are about 70 stelae, dated to 1100-800 BC, with depictions of Herzprung shields and horned warriors (Fig. 4) (Harrison 2004). It is even more intriguing to note the occurrence the Baltic amber in this region (Murillo-Barroso & Martín-Torres 2012).

We have already stressed that most regions that show matching metal isotopes with Scandinavian artefacts have Baltic amber in Bronze Age contexts. It is notable that Harding argues for three main episodes for the traffic of amber to the Aegean world 1600, 1500 and 1200 BC (Harding 1984, 1990). This fits well with the dating of some of the Scandinavian Bronze Age artefacts that in turn match with ores in the east Mediterranean world and it indicates that amber was one of the important features of the NMCA (Ling et al., in prep.).

So did the Wessex culture open the gateway to the Mediterranean world for the Scandinavians? It is of course not so simple and the

material indicates several routes and pathways, riverine, overland and maritime, and it is important to stress the strong connection between Scandinavia and Central Europe (Kristiansen 1988) but it suggests on the other hand that not all traffic to the north went via Central Europe. Several factors indicate that much of the metal during the Bronze Age was transmitted or channelled to Scandinavia via the British Isles and that tin, copper and amber may have been the major reason for this interaction (Fig. 9).

Another important observation that links Scandinavia to the British Isles in the Bronze Age is the isotopic evidence showing that Scandinavians used Cornish tin during the Bronze Age (Ling et al in prep). In fact both the British Isles and Scandinavia seems to have been connected to the Mediterranean world in the same way, and this is reciprocated, as Harding said some time ago 'the rationale for Mycenaean interest in the North is assumed to be the search for raw material; tin, gold, amber' (Harding 1990: 139). From the late Wessex period there is a lot of evidence linking the British Isles with the Aegean, such as the spacer plate amber, Arretton blades and not least the gold twisted earrings (Harding 1990, Eogean 1990). What we get then is natural amber from Scandinavia being altered by amber craftsmen from the Wessex culture and then transported and traded further to the Aegean world. Finally, the newly found shipwreck at Salcombe bay in Devon, dated to 1200-900 BC, included about 280 copper ingots and 30 tin ingots. According to preliminary analyses the tin in the cargo was of British origin while the copper is Spanish (online ref http://news.bbc.co.uk/2/hi/uk_news/england/devon/8515627.



Fig. 6 The expansion of the Nordic region towards the Baltic area, during the Late Bronze Age. A typical NMCA strategy to control the amber rich coast in Poland and northern Germany (after Kristiansen 1998).

stm). This find show how vibrant and complex the trade was during the Bronze Age and the correspondence of Spanish copper, Scandinavian artefacts and British artefacts demonstrates in a concrete manner how these regions were interlinked.

Was there a maritime route, a channel for metal and amber, that linked the western Mediterranean world and northern Europe? And could the British Isles have constituted a sort of maritime nexus for metal trade in northern Europe during the Bronze Age?

British Isles: a maritime nexus for metal trade in northern Europe during the Bronze Age?

The material evidence of interactions between the Mediterranean, British Isles and Scandinavia favours the notion of western 'maritime' routes or networks. This metal route had probably been established already in the Neolithic by 'Beaker' groups (cf. Harrison 1980; Cunliffe 2008; Needham 2009; Pilar 2008). If there was a maritime route that linked the south with the north of Europe, the British Isles would have had a very strategic maritime

Maritime positions, institutions and ambers as Nordic comparative advantage in the in the “international “ metal trade?

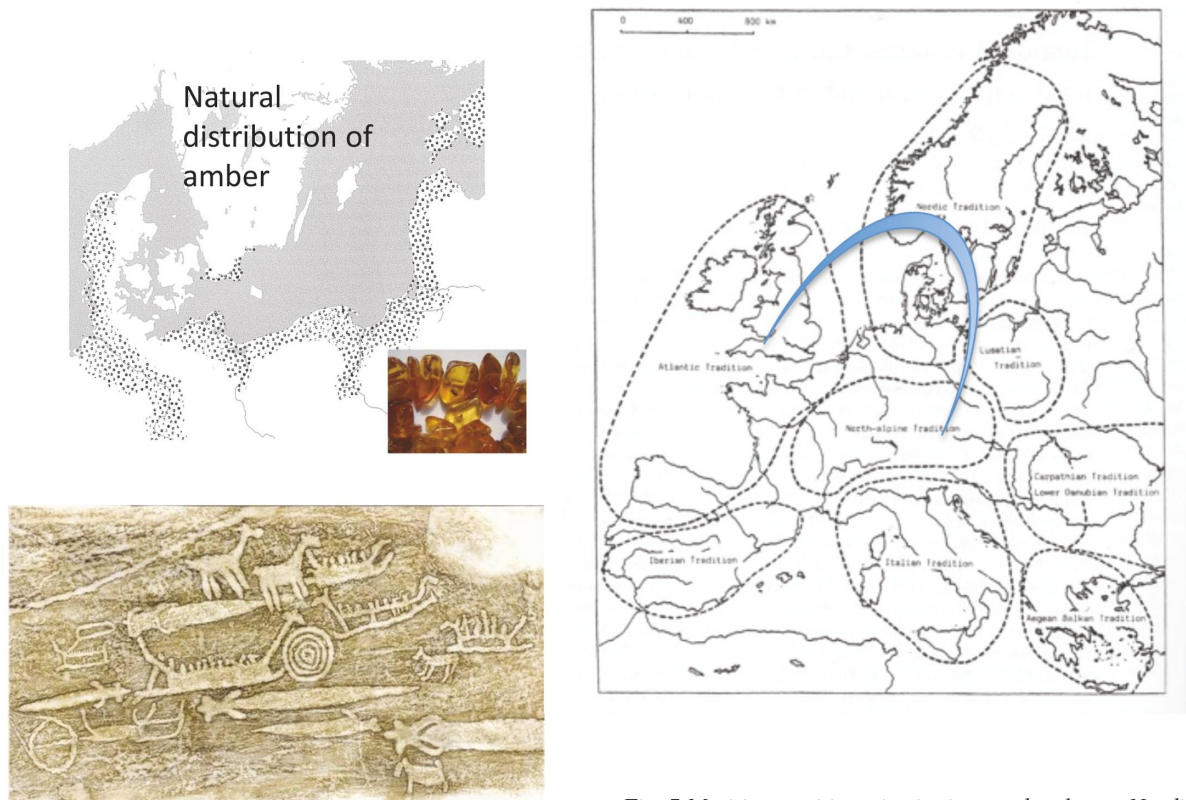


Fig. 7 Maritime positions, institutions and amber as Nordic comparative advantage in the 'international' metal trade.

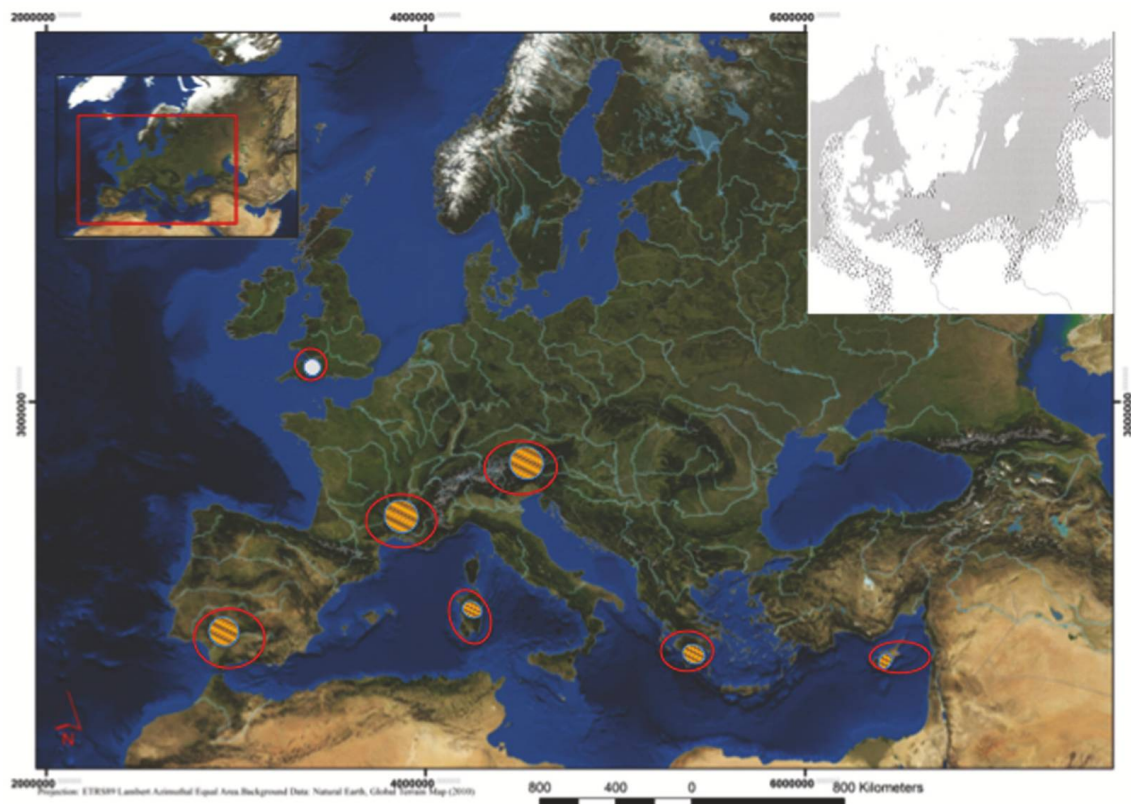


Fig. 8 One of the strongest arguments that amber was traded with metal is the discovery of Baltic amber roughly in the same regions as the Bronze Age mines. Red circles: amber; yellow: ore-bearing regions with isotopes that correspond with Scandinavian artefacts.

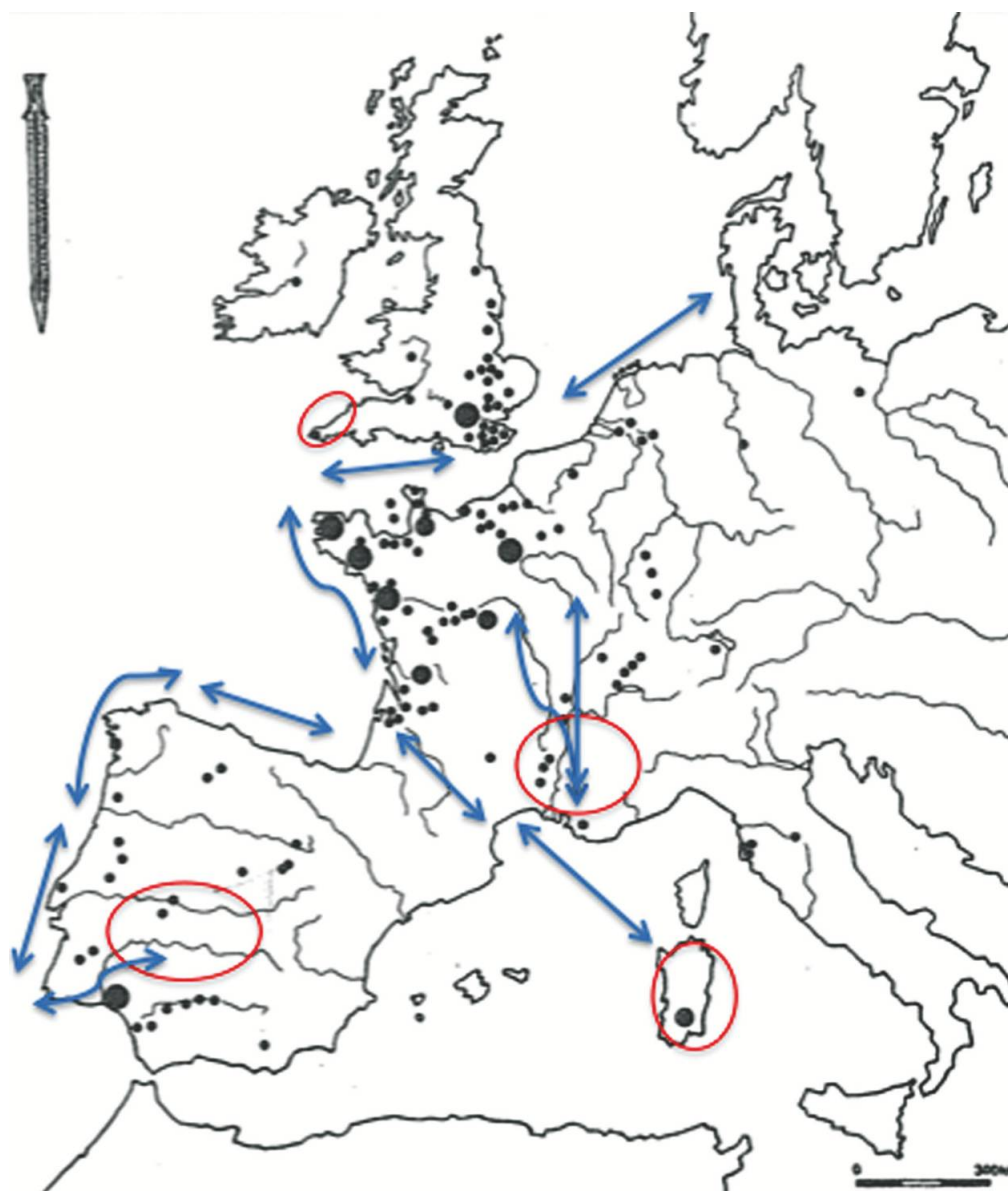


Fig. 9 A possible western maritime route for metal and amber during the LBA that linked the western Mediterranean world and northern Europe, projected on Kristiansen map from 1998, showing the distribution of carps- tongue swords in Europe. Red circles denotes the mining districts with matching isotopes with Scandinavian artefacts

position. In particular we could imagine a 'bottleneck' in the English Channel along the coast and river systems between south-eastern England and north-eastern France providing a particular maritime comparative advantage.

Moreover, because of the attraction of tin, several 'copper' producing areas could have directed their 'copper routes' towards the British Isles during the Bronze Age. Copper would have been brought to Britain from both the western Mediterranean world and the Alpine region. Tin also attracted groups from northern Europe bringing amber to *participate* in this interaction. Thus, warriors, travellers, traders, craftsmen and sailors conveying amber and metals from remote parts of Europe could have interacted on the coastal regions of the British Isles. In this context the British Isles may be regarded as a kind of 'third space' or arena of hybridization for northern Europe during the Bronze Age (Fig. 10).

Conclusion

Our evidence for flows and connectivities relates Scandinavia to the Atlantic West and to both sides of the English Channel as a 'third space' of mercantile interaction from about 1600-1500 BC. Yet the style and the forms of Nordic Bronzes point in the opposite direction; i.e. towards mimesis and borrowing from Central Europe and the Carpathians. It is understandable that before the new isotope analyses Central Europe was also thought to have been the route by which metals and amber was transmitted. We are faced with the interesting paradox that cosmologically the links to warrior kingship, so emphasized by Kristiansen, are in direct antithesis to the direction of dependence on supplies of the materials needed to reproduce it. As far as we can tell, the majority of materials were provided in a 'raw state' and it is local craftsmen in Denmark and Sweden who were casting special forms, borrowed from the east and south-east, and were therefore

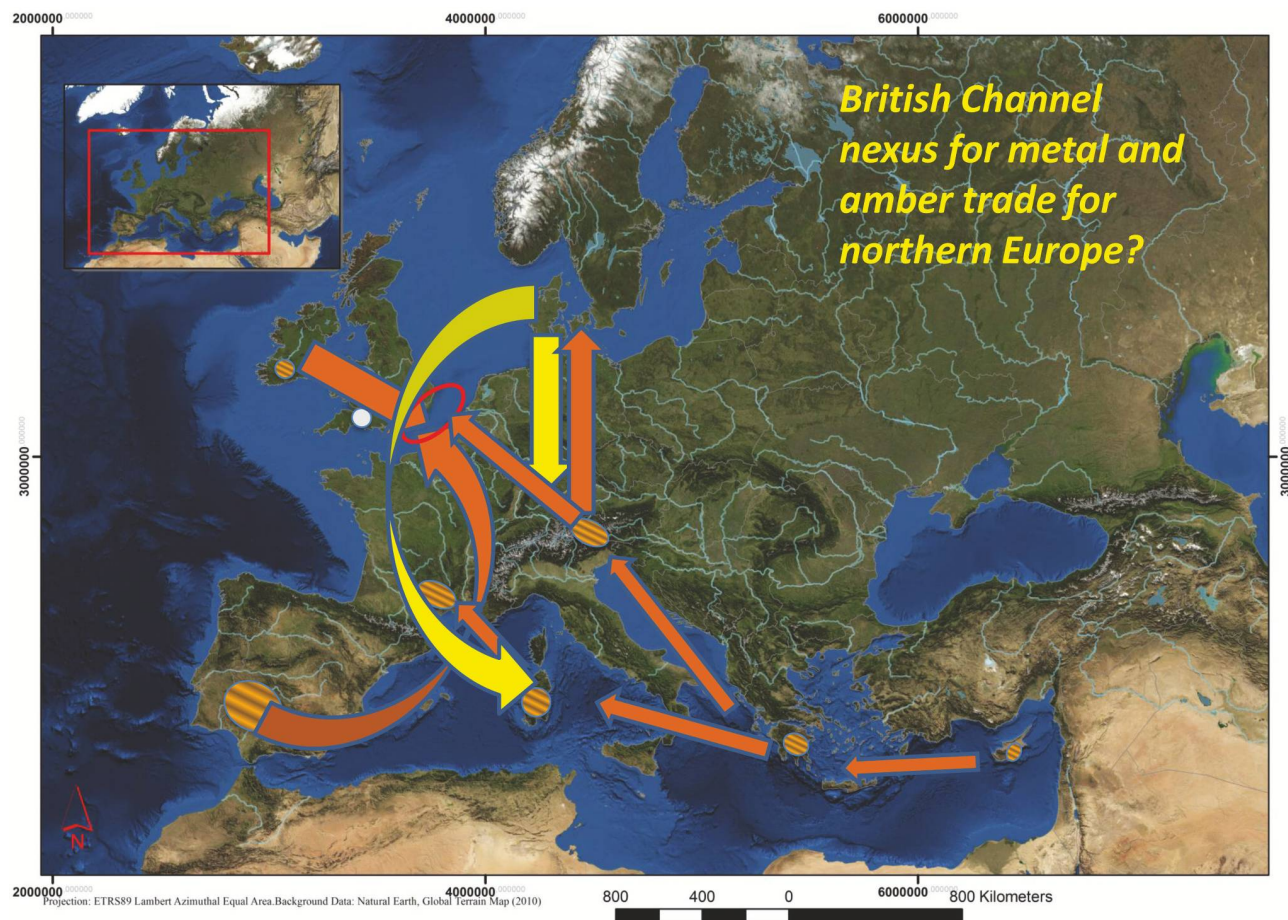


Fig. 10 A hypothetical view of the British Isles as a 'maritime nexus' for trade of metal and amber in northern Europe during the Bronze Age.

made unique to the Nordic region (Fig. 3). Whilst there are a few distinctive imports, especially well known for the prestige links they provided with the outside, the overall impression is of a pattern of copying forms and reproducing them in distinctive Nordic styles.

We are drawn therefore to recognize not only a sharp insider/outsider dichotomy that seems shared by all the regional groupings in the Bronze Age, but particularly in the case of the Nordic zone, inside and outside point in opposite directions. One towards a naturalizing western sphere from which raw metals came and towards which another raw material, natural unworked amber, flowed to be transformed by local craftsmen in various locations. The other points towards a cosmology of warrior kingship in which weapons figured largely in the transmission.

A network of regional groupings with inside and outside boundaries that were probably clear to practitioners, we suggest, is a basic feature of the origins of the cosmology of the Bronze Age in Europe. Prior flows and connectivities were harnessed, in particular through the prospecting for metals and amber in the western outreaches of the European continent during the Beaker period. From this we can derive a specific theory of value that created the conditions of bounded comparative advantage on which basis, with many transformations, the rest of the Bronze Age would develop. We come to these conclusions based on

the work of Kristian Kristiansen on a Bronze Age synthesis that basically has already said most of this. We are simply re-casting it in a slightly different language form.

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ARCHAEOLOGY FROM THE DUTCH TWILIGHT ZONE

Harry Fokkens, Patrick Valentijn and David Fontijn

Abstract: Travel is little discussed in considerations of exchange in Bronze Age Europe. This paper examines how two large interaction networks met at the Rhine-Meuse basin in the Netherlands. Interestingly, several aspects of these traditions did not mix. For instance, metal from the southern 'Atlantic' sphere seldom enters the north and vice versa with 'Nordic' types. We propose that one of the reasons for this rather strict division relates to seafaring. The coastal regimes south of the Rhine-Meuse are different from the northern coasts. Adjusting Needham's concept of a southern North Sea maritory (Needham 2009), we propose that many different maritories existed along the southern North Sea coast and Britain that encompassed comparable coastal and tidal regimes in which people were in frequent contact through coastal seafaring.

Keywords: seafaring, maritory, exchange networks

Introduction

Bronze Age Europe is increasingly being viewed as a coherent whole. It was a well-travelled world with high levels of communication, especially between elites. This is the world that Kristian Kristiansen has sketched in his many articles and books. In his view it was a world in which people travelled in search of prestige goods, but also in search of prestige through knowledge of distant places (e.g. Kristiansen & Larsson 2005). It was a world in which goods were exchanged or maybe even traded over long distances, a world in which people not only travelled, but also moved to other places and stayed there. For what reasons we do not know, but isotope studies prove that it is a fact (e.g. Price et al. 2004).

On archaeological distribution maps these movements are generally indicated as dots, often with circles or ovals around them signifying exchange networks, sometimes even with routes marked out. On maps of Europe these routes sometimes seem to run over land, even in regions of difficult access, like mountain zones. Or, arrows are drawn along coasts and across seas as if no tides and currents existed. A discussion of means of travel and transport, or how travellers moved through the territories of different culture groups, is almost absent. In this respect the Netherlands forms an interesting research area. On distribution maps it is generally placed outside or between large exchange and communication networks: the Nordic and the Atlantic spheres or traditions. Apparently the Netherlands constitutes a kind of marginal zone in between: a twilight zone. On the other hand the Netherlands, especially the Lower Rhine basin, is often referred to as a place of origin of developments, especially with respect to Bell Beakers. There is therefore a kind of paradoxical situation: it is in between, yet central. We should add here that by 'Nordic tradition' we do not mean Scandinavian in a strict sense. We use it following Kristian Kristiansen (1998; Fig. 1) as a general indication of a sphere of influence, a tradition he calls it, in which Scandinavia (Denmark, and parts of Norway and Sweden) is certainly central, but which extends to Schleswig-Holstein, northern Germany and the northern and eastern Netherlands.

An interesting question is: what does the archaeology of this twilight zone look like? Is it really outside interaction networks? Can we recognize these networks 'on the ground' anyway? What kind of social processes do we expect in such a transitional zone?

How can such an intermediate or transitional zone be 'central' at the same time?

These questions are discussed below with the hope of offering Kristian some content for a blank space in his map (Fig. 1), and in that of many other authors. We also hope to provide some insights into trade and exchange on the borders of these large interaction spheres. The discussion begins with a description of the palaeogeography of the Netherlands in the Bronze Age, because that may help to shed light on some of the cultural traditions that developed in the Lower Rhine-Meuse basin and adjacent regions.

Palaeogeography of the Netherlands c. 2750 - 1500 cal BC

The Netherlands are generally equated with the Lower Rhine basin. And the Lower Rhine basin certainly was an important structural element, especially because the river Meuse, and to some extent also the Scheldt, are part of the same basin. This large river delta extends on the sea side about 130 km between Ostend and Katwijk and reaches 80 km inland to the Nijmegen area. On the sea side the delta was in the Bronze Age protected by coastal barriers and dunes that were probably densely inhabited.

Behind those barriers lay the coastal lowlands. These were marked by myriads of gullies, tidal marshes and lagoons; tidal influence may have been felt far inland. Large river systems like the Scheldt, the Meuse, the Rhine and the Vecht kept their own outlets in the coast. Contact between the uplands and the coast was possible through these rivers and adjacent tidal zones.

East of the coastal zone were peat marshes. During the Holocene these became more and more substantial as drainage systems were impeded by coastal barrier formation (Vos & Weerts 2011:54). In principle these zones were not inhabited. They may have been used for hunting and fishing, but we have little evidence for habitation in or on top of the peat until the Early Iron Age.

The Rhine-Meuse delta proper harboured a mix of eco-zones. The river delta was broad and included a maze of river gullies, crevasse splays and marshy back swamps. Pleistocene outcrops (Dutch: donken), formed as river dunes during the Weichselian, provided good places for living. Habitation was also possible on natural levees, dried-up crevasse splays and silted-up river channels. These were suitable for small scale farming as well as



Fig. 1 Early Bronze Age regional traditions according to Kristiansen 1998 (fig. 26).

gathering, hunting and fishing (cf. Louwe Kooijmans 1998; Van Gijn & Louwe Kooijmans 2005).

North and south of the river delta lay the Pleistocene uplands. These consist of the ice-pushed landscapes of the central, northern and eastern Netherlands, and the sand plateaus of the southern Netherlands. The ice-pushed ridges of the central Netherlands (the Utrechtse Heuvelrug & de Veluwe), the eastern Netherlands and the northern Netherlands (de Hondsrug) were formed during the Saalien when the land ice had its southernmost expansion at the Rijk van Nijmegen (Fig. 2). The Rhine-Meuse valley in its present form was created in that period: the land ice blocked the rivers in their originally more northern trajectory and melt water contributed to the deep valleys that ended in the North Sea basin. In the following cold period of the Weichselian, the ice-pushed regions were covered with wind-blown sand (Van Gijssels & Van der Valk 2005). In the river valleys wind-blown sands from dry river sediments formed dunes (the present donken), and south of the river valleys larger cover-sand plateaus of the southern provinces developed. These do not show the marked relief of the regions that had been transformed by land ice. The plateaus are drained by many small rivers and rivulets originating in the Ardennes and also in peat moors that once covered this region (Van Gijssels & Van der Valk 2005).

In the start of the Holocene period the ice-pushed landscapes of the north were connected with Veluwe and the eastern Netherlands,

but after c. 3000 cal BC wide peat marshes developed in the IJssel-Vecht valley, more or less 'cutting off' the north from the remainder of the Netherlands (cf. Vos & Weerts 2011:50).

The cultural landscape of the Neolithic: emerging interaction spheres

This physical background had an impact on the cultural landscape that formed after the withdrawal of the land ice. In the Mesolithic and especially in the Neolithic we see that different traditions developed in the river delta, on the Pleistocene uplands of the central, northern and eastern Netherlands, and on the sand and loess plateaus of the south. Around 5300 cal BC the first Linear Pottery Culture (LPC) farmers arrived on the southern loess plateaus (Van Gijn & Louwe Kooijmans 2005:204). The LPC farmers were bound to the loess, and also their successors did not move to the wetlands of the Rhine-Meuse delta. There, Late Mesolithic groups adopted a semi-agrarian lifestyle and the Hazendonk/Swifterbant-Vlaardingen/Stein traditions developed. For the central and northern uplands we have very little evidence for habitation in this period until Funnel Beaker farmers colonised that region from the north-west around 3400 cal BC (Van Gijn & Louwe Kooijmans 2005:211) (Fig. 3).

Though there are many similarities between these traditions, it is quite clear that we are dealing with regional cultural groups that felt connected with their particular 'habitat'. They had adapted

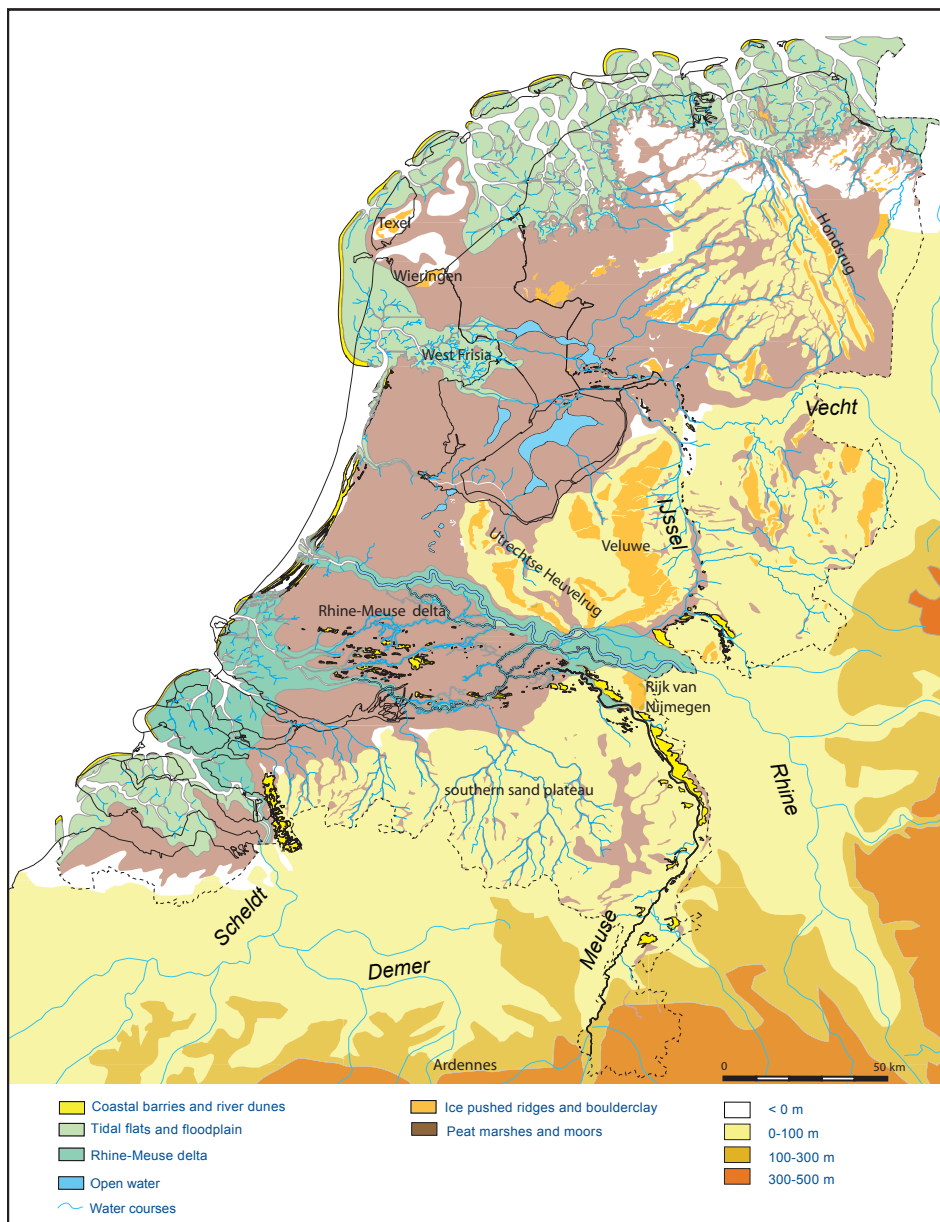


Fig. 2 Palaeogeographical map of the Netherlands c. 2750 cal BC. It shows the Netherlands before peat growth started to dominate in most of the country. Around 1500 cal BC peat growth in the IJssel and Vecht valleys had isolated the north and east from the central Netherlands (adapted from Vos and Weerts 2011: 51).

to these different environments with respect to economy and had developed regionally specific burial traditions, material culture and exchange networks. Funnel-beaker groups, for instance, were bound to the Pleistocene uplands of the north, and in a later stage also of the central Netherlands, but they never inhabited the river dunes in the delta, the coastal barriers of the west or the southern sand plateaus.

At the same time we can see how these regionally specific archaeological cultures, were part of larger interregional exchange networks. The square flint axes of the Funnel beaker culture were imports from Scandinavia (Denmark), while pottery style, clay discs, megalithic monuments and other aspects were clearly also related to the Nordic sphere (cf. Bakker 1979). The culture groups that lived in the Rhine-Meuse delta and on the southern sand plateaus had oval flint axes made of flint from southern sources (Bakker 2006), notably southern Dutch and Belgian flint mines. All their other flint was imported and came from the same southern sources. It is quite obvious that for flint procurement two different networks were in place and that these were more than just exchange networks. They represent more intensive

interaction spheres that shared traditions in housing, burial rites, etc. The people that inhabited the Rhine-Meuse delta appear to have identified with that southern interaction sphere (cf. Verhart 2010:184 ff.).

The Rhine-Meuse basin seems to have acted as a transition zone. Here we find evidence for exchanges between the two cultural traditions in the form of the occasional Funnel Beaker pot that occurs in Vlaardingen contexts, and Funnel Beaker knob-buttressed hammer axes in Stein contexts (Bakker 1979). However, the two networks do not seem to mix or amalgamate, they remain quite separate. There were no borders, yet cultural differences are apparent.

The Bronze Age cultural landscape

Against this cultural background around 2600 cal BC Bell Beakers appeared. First they occurred in Single Grave and Vlaardingen contexts, but after 2400 cal BC distinct regional groups developed. They seem to unify the existing cultural palette, but this is probably only superficial. The problem is that everyone focuses

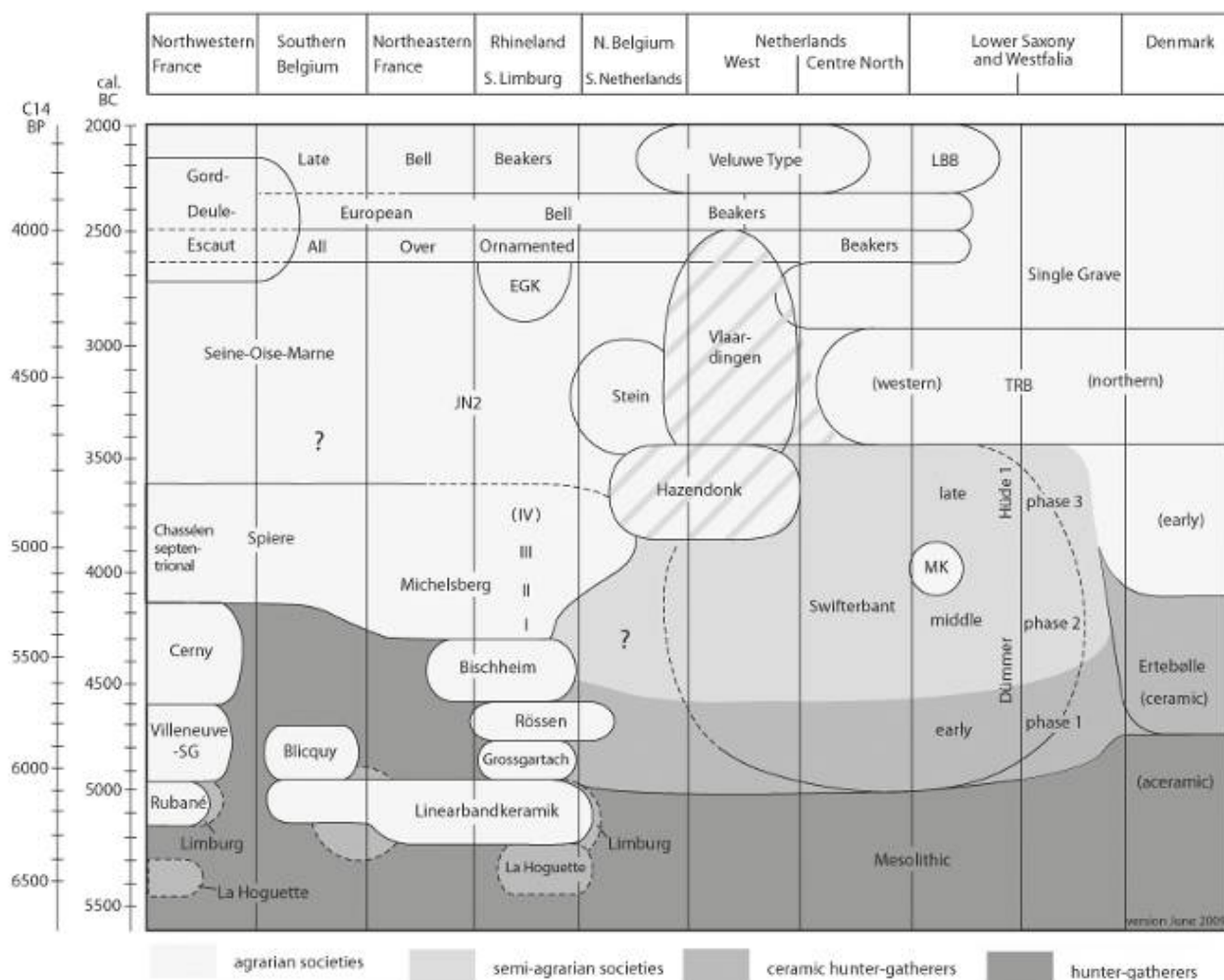


Fig. 3 Louwe Kooijmans' dynamic model of Neolithisation. Apart from showing a traditional scheme of cultural traditions, it also shows that for a very long time in the Rhine-Meuse delta (indicated as west) people had what he calls a semi-agrarian existence (from Louwe Kooijmans 1998: 420).

on burial contexts where Beakers seem to resemble each other in style, but if we look at settlement contexts, we can see that they were introduced in existing regional contexts (Fokkens 2012b). These regional traditions continued under a thin layer of Beaker 'veneer' (Gibson 2007).

For the distribution of copper and gold new sources were needed of course, but as we will see, the overall impression is that the existing regional and inter-regional contacts largely stayed in place. Whereas most Neolithic contacts appear to have been largely continental, a British connection became more visible in the Bronze Age. After 1800 cal BC it was a well integrated part of those networks. The directionality of this network is always a matter of discussion. Our British colleagues have suggested that beakers arrived from the continent with migrants (Sheridan 2008; Needham 2005; Fitzpatrick 2011). In our opinion, however, even if some people from the continent went across and stayed, the majority of cultural changes in Britain were brought about by British people travelling to the continent and by participation of coastal communities in a larger Atlantic 'network' (cf. Fokkens 2012a). As we will argue, that network extended to the southern and western Netherlands, but not to the north-west and north. It seems to have had the Rhine as the northern 'border'.

In the Bronze Age proper, after 2000 cal BC, the differences between the north and the south became more clearly visible again, but in a slightly different constellation than before. Again there were two larger interaction spheres. The Nordic sphere included the north-west and the east and seems to 'end' at the peat marshes that had developed in the IJssel-Vecht basin. The Atlantic sphere included the centre of the Netherlands and the eastern part of the river delta, the southern sand plateaus and the Meuse valley (cf. Fig. 1) (cf. Fokkens 2009:86). Differences between the two spheres are visible not only in the styles of houses, of burial and ceramic traditions and bronze objects, but also in deposition practices and in the structure of arable land (Table 1).

With respect to farms, different traditions are visible (cf. Arnoldussen 2008). The familiar three-aisled Bronze Age farms developed from 1500 cal BC onwards, both in the Nordic and in the Atlantic sphere. In the north and east we find the Elp and Emmerhout-type farms that are also well known from north-west Germany, Schleswig-Holstein and Jutland (cf. Arnoldussen 2008:200). Stable partitions are generally visible in these farms. These are not visible in the Oss type houses of the southern tradition, but we still think that stables were also part of these farms (cf. Fokkens 2005b). In the river area and in West-Frisia

Table 1. Global model of traits and cultural associations in different regions of the Netherlands

traits	<i>Nordic sphere</i>		<i>Atlantic sphere</i>	
	<i>northwest</i>	<i>north, east</i>	<i>centre/in between</i>	<i>Meuse delta, south</i>
Farms	three aisled longhouses Andijk/ Zijderveld type, no stable visible	three aisled longhouses Elp/Emmerhout type with visible stable	uplands unknown; river area: Andijk/ Zijderveld type, no stable visible	three aisled longhouses Oss type, no stable visible
burial	inhumation burials, swords and axes; after 1500 BC unknown	inhumation burials, swords and axes	inhumation burials, cremation burials, swords and axes	barrows, cremation burials, pottery as urns
pottery	Hoogkarspel pottery	Elp-pottery	Hilversum pottery	Hilversum pottery
metal	Nordic types	Nordic types	Atlantic types	Atlantic types
arable	unknown	Celtic fields	Celtic fields	Celtic fields??
deposition	unknown	peat bogs, rivers, small lakes	rivers, small lakes	rivers, small lakes

farms were surrounded by ditches to catch water running from the roof. Apart from that, a fundamental difference is the place of the entrance. Elp, Emmerhout and Oss farms have entrances located on the long sides, dividing between the stable and ‘living’ quarters. In West-Frisia and in the river delta houses have entrances on each short side, one for livestock and one for people, perhaps. This may indicate that the types were experienced differently, maybe even had different cosmological connotations. Round houses do not occur in the Netherlands (cf. Theunissen 1999; Arnoldussen & Fokkens 2008). These are part of the tradition in the British Isles (e.g. Bewley 1994), and possibly also in northern France, though these reconstructions are not very convincing (cf. Bourgeois & Talon 2009:46).

One of the cultural elements that make differences most visible to us are the burial traditions. The Nordic tradition is well known: in the earlier part of the Middle Bronze Age burials included swords, arrowheads and palstaves. The dead were buried in a stretched-out position on the back. If pottery was present in those burials (which was rare), it was a container for food or drink (cf. Lohof 1991). This tradition is common in large parts of north-west Europe (cf. Harding 2000, 76). South and west of the IJssel-Vecht basin, however, inhumation burials are much more infrequent (Theunissen 1990) and cremations are the most common burial type from 1850 cal BC onwards. In the south and central Netherlands, pottery in the distinct Hilversum/Drakenstein/Éramecourt style (cf. Fokkens 2005a; Needham 2009) is present in the graves as containers for the dead rather than for food and drink. There is very little evidence for grave goods: bronze weapons, like swords, were not deposited in graves but in rivers (Theunissen 1999; Fontijn 2002).

Regional traditions also show up in ceramic styles. We distinguish between a poorly known Elp style in the north and east, a Hilversum style in the centre and south, and a Hoogkarspel style in the north-west. The Hoogkarspel style is regional only, but the Hilversum style is clearly affiliated with the Atlantic tradition, with comparable pottery in Wessex and northern France (cf. Fokkens 2005a).

The distribution of types of metal objects by and large shows regional differences (Fontijn 2002:116; 2009), but these traditions developed within the ‘borders’ of the two larger networks. In the south most imported axes are of western European types, though a few have been imported from the northern Netherlands (Fontijn 2002:118). This is also true for other categories of metal objects like swords and spearheads. In the south these are

predominantly of northern French and British (‘Atlantic’) types (Fontijn 2002:131). In the north-western and northern parts of the Netherlands types of rapiers and swords that circulate in the Nordic sphere are predominant.

Networks and identity

To sum up, the Dutch twilight zone appears to have been a transitional zone between two large interaction networks that ‘on the ground’ can be surprisingly easily distinguished; not only in regional cultural traditions, but also in the distribution of metal, house styles and burial traditions. The Rhine-Meuse delta appears to have been a border zone. It is as if people in the southern Netherlands felt part of a different world, travelled more frequently to the south and the west, and preferred to interact with the ‘Atlantic’ world. Over land the Meuse valley was probably one of the connecting routes, but coastal travel and cross channel travel probably was also ‘normal’. People from the northern uplands, on the other hand, looked more to the east and the north. Their burial and housing traditions were part of the Northern world and they probably ‘recognized’ more in the regionally different cultural traditions of the north than they did in the south.

Did people really identify with these two traditions or are they just our archaeological constructs? One of the authors (Valentijn) is studying the place of West Frisia in larger social networks in more detail. His research shows that archaeologists are far too ‘simple’ in their thinking about issues of social and cultural identity. No archaeologist today would speak of a monolithic, bounded archaeological culture reflecting ‘a people’. Nonetheless, in practice many still appear to maintain the notion that ethnicity has something to do with a totality of differences in ‘objective’ cultural traits (but see Jones 1997; Shennan 1989). This is true despite an already established tradition of anthropological and sociological theory stressing that ethnicity is about situational self-definition based on perceived cultural differences (Eriksen 2002). So, to state that these traditions were realities people identified with is far beyond what we can say now, but this is a topic of research for the ongoing Farmers of the Coast project.

Nevertheless, we think that in this case we can speak of two real networks. Of course, these networks did not stop at the Rhine-Meuse delta, as the appearance of several similar object types and traditions on both sides of the delta show. Still, the social relations of people on each side of the delta were significantly different from the relations people had across the delta. For instance, across the delta people shared certain traditions in house building and

pottery making, whereas the exchange of metals or the sharing in burial traditions was restricted to only one side of the delta.

This illustrates a few important aspects of identity: i.e., that it is contextual (e.g. Eriksen 1992); that it is a process better called 'identifying' (cf. Brubaker 2004); and that it is related to action (cf. Somers 1994:615-6). Apparently people did not have a cultural identity, but given the social context they identified more or less with their neighbours across the delta. And, depending on how they identified, they actually acted differently towards each other: certain traditions and items were shared while others were not.

This, of course, need not be true just for social relations across the delta, but also for social relations on each side of it. That people shared in, e.g. Nordic traditions and consumed Nordic style objects does not mean that they had a Nordic identity. Rather they identified in such a way that, for instance, exchange of Northern metals was deemed possible. It does not mean that people identified fully: cultural differences between them still existed and might have been expressed, affecting the social relationship and consequently actions. And we should not only think of identities as a system of Chinese boxes (cf. Eriksen 1992:172; Jones 1997:100), as is often done (e.g. Kristiansen 1998, fig. 28). It is important to gain more insights into these processes of identification within networks, as they affected peoples' activities and as such the dynamics of a network.

It appears that the Rhine-Meuse delta presented a social boundary to the spread of southern and Nordic traditions and objects. Cultural traditions dating back to the Neolithic probably contributed to the fact that people had distinct identities on each side of the delta, with the result that certain traditions and objects almost never crossed the rivers.

The roles of travel and seafaring

In the introductory paragraph, we noted that the Rhine-Meuse delta was probably not only a 'border' zone, but is also seen as a central region in terms of travel and for the transmission of ideas. The Rhine and Meuse must have always constituted important routes of communication with central Germany and central France. This is expressed most clearly in the Hallstatt C period, around 700 cal BC, when we see these connections materialize in the distribution of rich Hallstatt burials in central Germany, central France and in the Rhine-Meuse delta. These really appear to represent direct contacts (cf. Pare 1991).

From the mouths of these rivers, coastal and cross channel navigation was possible. But this is not as self evident as it is generally depicted. For instance, there is the question whether river boats were suitable for coastal travel or even sea crossings (cf. Van de Noort 2006). Did people use the canoes that we know they had, or should we think in terms of large plank-built vessels of the kind found in Dover or Ferreby (cf. Clark 2004; Van de Noort 2006), or vessels of the Scandinavian type as depicted on rock art (Kristiansen 2004; Ling 2010). Where did these travels start? Was that a specialty of coastal communities like in Jutland and along the coastal barriers of the Low Countries, the French and British coasts? (cf. Samson 2006; Needham 2009; Van de Noort 2012). Questions like that are not asked very often (but see Rowlands & Ling, this volume), but they are essential for understanding how seafaring and travel in the Bronze Age were embedded in the social system, and how they transformed the Bronze Age world.

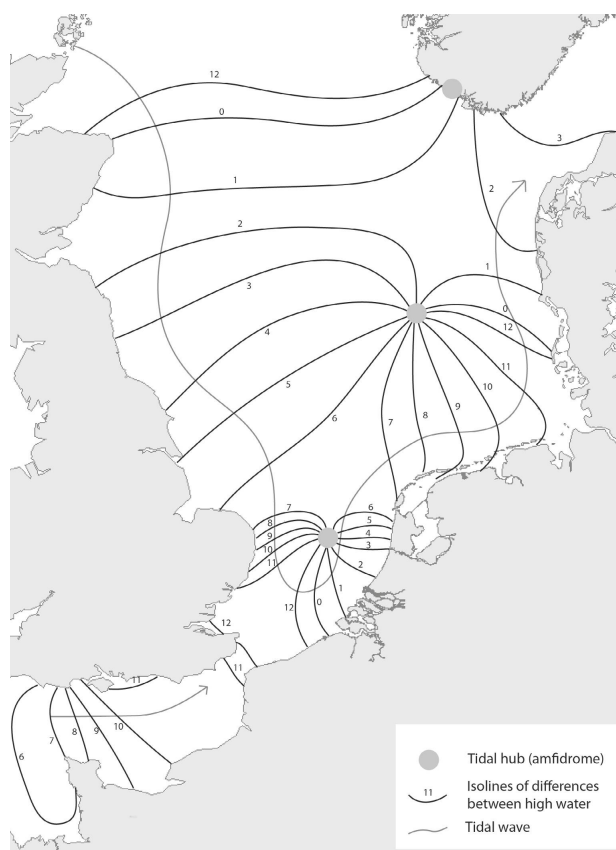


Fig. 4 Lines of the same average high water differences in hours. This shows three tidal hubs (amfidromes) with almost no difference between high and low tide. The isolines predict the direction of tidal streams, not their strength (after Sager 1963).

Why does the Rhine-Meuse basin form a border between two cultural traditions if it connects regions rather than divides them? That is a very difficult question to answer, but we think that at least part of an explanation may be related to the traffic-geographical situation of the southern Netherlands in relation to coastal seafaring. Undoubtedly, tidal currents are one of the aspects that influenced coastal travel. Maps of currents and tidal movements in the North Sea basin¹ show that there are two major tidal waves, one coming in from the channel, the other around Scotland from the Atlantic. The wave coming from the channel is blocked by the Atlantic wave, creating high tidal amplitudes on the southern English and Normandy coast up to 10 metres.² The tidal wave from Scotland moves north along the Dutch coast and gradually becomes less in amplitude. At Vlissingen, for instance, the amplitude is at present around 4.5 m, at Den Helder in the north-west around 1.5 m. Of course this is not exactly how it was in the past, but with a lower sea level, the tidal currents and differences may have been even higher. How they may have affected seafaring is still a subject of research, but crossing the North Sea from the Rhine basin to England may have been a much more difficult exercise than we now assume.

Another factor that influences crossings is the location of tidal hubs. In the north-west of the Netherlands, for instance, the tidal

¹ Maps are available from the website www.noordzeeatlas.nl, a website from Dutch public institutions dealing with the North Sea and <http://www.meetadviesdienst.nl/nl/dossiers/stroomatlas-noordzee.htm>.

² Information about tidal currents is available from www.noordzeeatlas.nl and from the www.ecomare.nl, the centre for North Sea and the Wadden Sea.

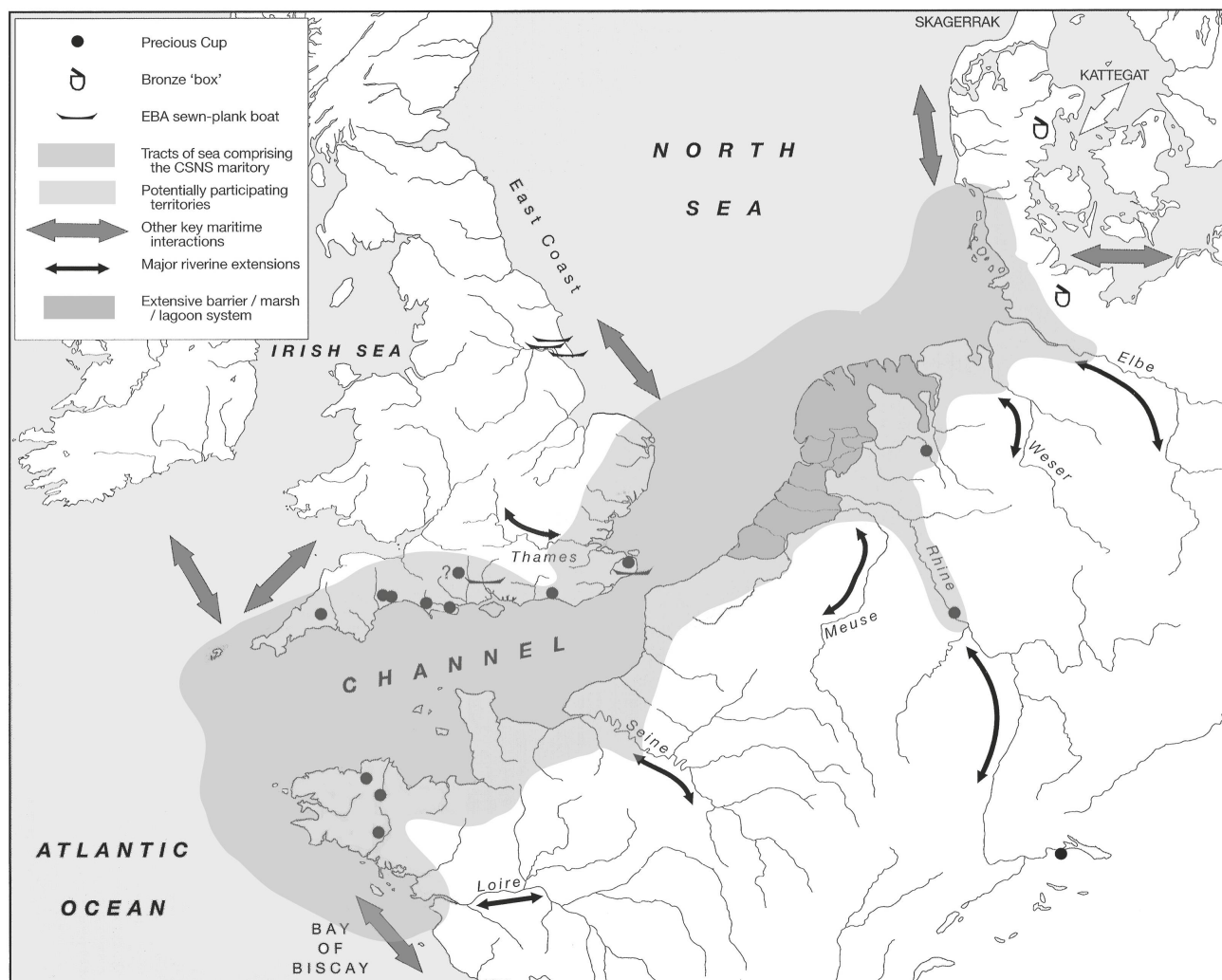


Fig.5 The Channel/ southern North Sea (CSNS) Maritory according to Needham (adapted from Needham 2008, fig. 2.5).

amplitude is lowest because one of two North Sea ‘amphidromes’ (tidal hubs) is situated near the north-west part of the Dutch coast (Fig. 4). An amphidrome is an area where there is virtually no tidal amplitude, which is caused by the anti-clockwise movement of tidal streams due to the Coriolis force (Sager 1963). It is more or less a centre around which the tidal waves circulate. There is a tidal current here, but it is minimal. Therefore, that might be part of a favourable route for navigation. To the north the amplitudes rise again. There is also a large disturbing effect around the river deltas and on the Dutch-German wadden coast: due to shallow waters it is ebb for a much a longer time in these basins than it is flood.

What the impact of these currents and coastal formations was on the possibilities for seafaring is still under study in the context of the Farmers of the Coast project of Leiden University (see note). The question we would like to test is whether the configuration of tidal currents and tidal hubs may be one of the reasons that the areas south of the Rhine established regular contacts and exchange with Britain and the French coast, while the northern regions did not. The Rhine, we propose, was a logical region to end voyages down the coast from Jutland. Seafaring further down the coast and to England and the southern Channel coast involved different

knowledge; it involved experience with sailing on open sea and with the high tidal amplitudes and strong currents in that region.

There will have been many other aspects involved, of course, such as the otherness of the coastal landscape. Coming from Jutland, rounding Texel, one leaves the wadden coast with its tidal flats and shallow basins. So, coastal travel from north to south meets a natural border when the Dutch coast is rounded. The coastal landscape changes, and beyond that one enters a different sea regime, more dominated by the Channel. Of course that may have been no problem for seafarers who really wanted to go south. But for regular travel and interregional communication, trade and exchange, the north-western Dutch coast may have been a ‘natural’ unit, both for travel along the coast and over land.

Final remarks

It is apparent that the Dutch twilight zone is in fact a very interesting research area where two cultural traditions met. Yet they did not meet as clearly defined ‘traditions’ or ‘cultures’ or ‘networks’ as the circles on maps tend to suggest (cf. Fig. 1). These circles are constituted by many different regional groups which developed their own cultural traditions and material culture. One would expect physical borders not to make any difference for

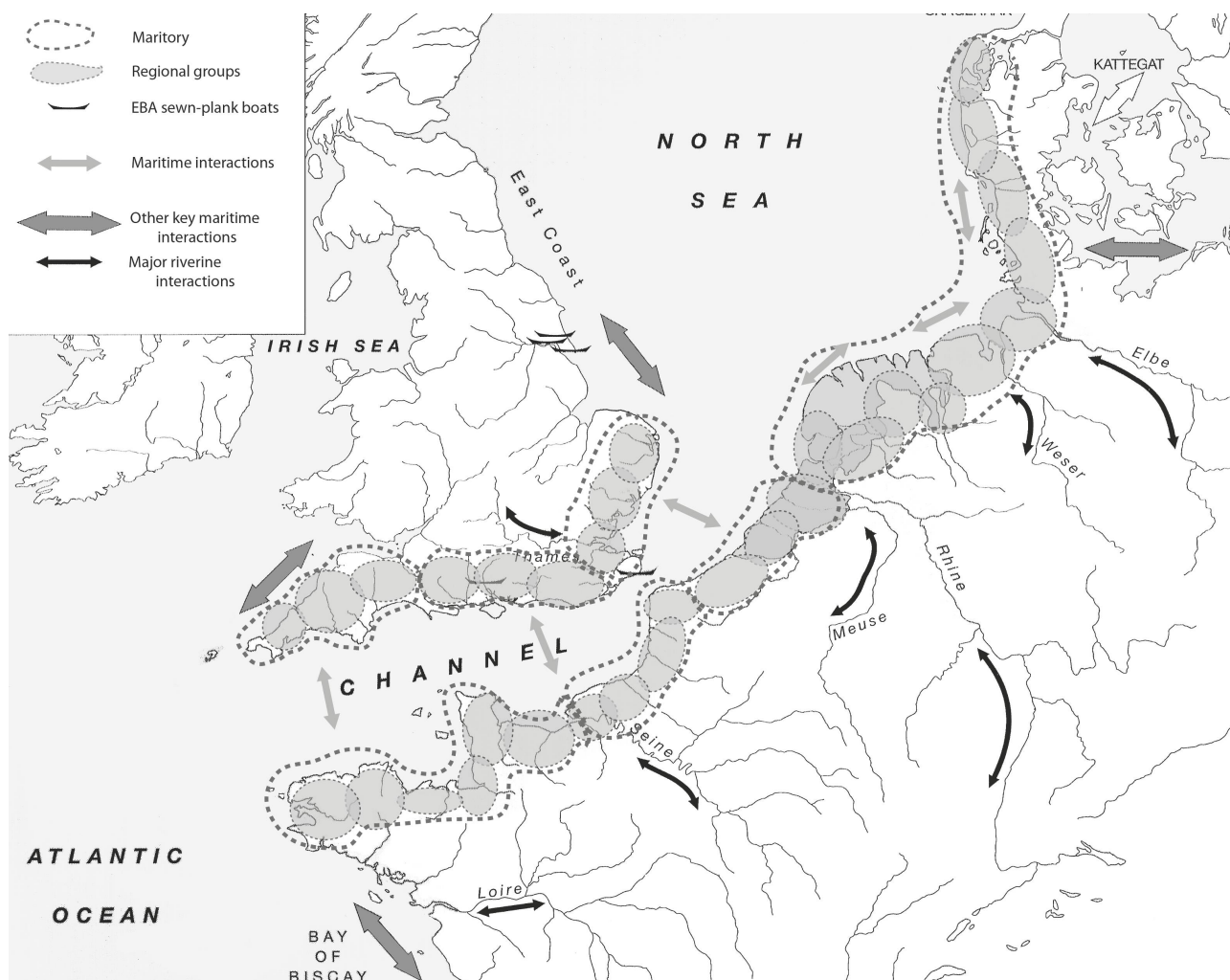


Fig. 6 Model of North Sea maritories and interaction between coastal communities along the southern North Sea and Channel coasts.

contacts and exchange between these groups. Large rivers and marshes were crossed everywhere, and presented no obstacle. So, physically there is no reason why the Rhine-Meuse delta should constitute a border between regional groups. Yet in some respects it did: metal objects from the south were not exchanged to the north and vice versa. Or when they did, they were treated as ‘foreign’ and different from regionally produced objects (cf. Fontijn 2008). Burial traditions also differed between north and south, and that cannot be explained as just a matter of regional preference. Supra regional patterns become visible through burial and building practices, maybe even reflecting different cosmologies that may have acted to both guide and restrict travel (cf. Goldhahn 2008; Kaul 2004; Ling 2008).

It is tempting to introduce here Needham’s concept of a Channel / Southern North Sea (CSNS) Maritory (Needham 2009). Needham used the concept to indicate ‘a definable zone of privileged or high-flux interaction used for the execution of certain specialist maritime ‘exchanges’’ (Needham 2009:18). Important in this definition is the suggestion that we are dealing with maritime specialists, navigators and specialist craftsmen (cf. also Van de Noort 2012). The ‘specialists’ were members of communities that had knowledge of seafaring, for whom the coast and coastal travel was part of their existence. The communities that we described

as regional groups in the Netherlands, probably were such communities. These communities are different from non-coastal communities because seafaring requires specialist knowledge of boat building, navigation, etc., and because these communities had to develop social mechanisms to cope with their young men being away for long times and often not even returning at all.

Needham’s idea is therefore important. However, in our view it is guided too much by the desire to explain archaeological distribution patterns of precious objects. He sees, for instance, gold cups as ritual objects that play a role in binding coastal communities. Therefore the outline of his CSNS Maritory is determined by the distribution of gold cups (Fig. 5; Needham 2009: fig. 2.5). This implies, for instance, that the Rhine up to the confluence with the Mosel is part of the maritory. This reduces the concept to a kind of prestige goods trade network.

Instead we would like to propose that not one but several maritories existed along the North Sea coast (Fig. 6), shaped in part by tidal regimes and the coastal landscape. Coastal communities south of the Rhine were probably familiar with travel to the Strait of Dover and the English coast. Coastal communities north of the Rhine, where the wadden coast also started, may have been adapted to this different coastal regime which continued all

the way up to Denmark. In terms of coastal regimes, that of the Rhine-Meuse delta thus constituted a kind of 'natural' (permeable) border between two the Atlantic and the Nordic spheres.

We argued that it is not realistic to suggest that there was one maritory that united both Channel coasts with the southern North Sea, as Needham's model suggests. At the Rhine-Meuse delta two kinds of 'borders' seem to have coincided: a cultural border creating a social barrier and a traffic-geographical border creating a physical barrier. Neither was impenetrable, and indeed they were traversed in certain situations. In interplay, however, these borders meant that the majority of social contacts and cultural traits did not cross the delta. As such, they made the Rhine-Meuse delta the place where two maritories came to an end. Maybe they also met, but that is not visible in the data.

Dear Kristian, we hope to have offered you some food for thought. Something to incorporate in the many inspiring ideas you undoubtedly are going to present to us in the future.

Note:

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DILMUN: BEYOND THE SOUTHERN FRONTIER OF MESOPOTAMIA

Flemming Højlund

Abstract: The purpose of the paper is to show how changing chronological correlations between Dilmun, Mesopotamia and the Indus have suggested specific historic relations. The focus is on Dilmun's relationship with Mesopotamia c. 1800 BC, at the peak of the Dilmun state, and it is shown how recent excavations on the island of Failaka in Kuwait may throw light on this critical time, just prior to the collapse of Dilmun.

Keywords: Dilmun, Mesopotamia, Magan, Meluhha, Hammurabi, stamp seal glyptics

One of Kristian Kristiansen's favourite research themes has been the tracing of connections between Bronze Age Scandinavia and the Mycenaean world, and in the book *The Rise of Bronze Age Society*, written with Thomas B. Larsson (2005), he even pushes on to Mesopotamia. For more than thirty years the present writer has grappled with relations with Mesopotamia from the opposite end, my point of departure being *Dilmun*, i.e. Bronze Age Kuwait and Bahrain (Fig. 1).

In 1954 the Assyriologist A. Leo Oppenheim published a review of the early second millennium cuneiform texts found by C.L. Woolley in the city of Ur in South Mesopotamia. The most interesting of these texts deal with the role of Ur as 'the port of

entry' for copper into Mesopotamia. Oppenheim described Dilmun as the 'doorway' to the East, to the regions of *Magan* (Oman) and *Meluhha* (India), from whence metal, stone, ivory and other exotic raw materials came to the big cities of South Mesopotamia. Oppenheim described Dilmun as a marketplace, an *emporium*, a neutral territory, in which the parties coming from various regions of the coastal area of the Gulf could exchange or sell the products of their countries (Oppenheim 1954: 7, 9).

In the same year that Oppenheim published his seminal article on the Dilmun trade, Moesgaard Museum in Aarhus, Denmark began large-scale excavations in Bahrain and a few years later also in Qatar, Kuwait, the United Arab Emirates, Saudi Arabia and Oman



Fig. 1 Map of Mesopotamia and her southern frontier.

(Glob 1968; Bibby 1969; Højlund 1999). In 1970, while studying prehistoric archaeology at Aarhus University's department at Moesgaard, Kristian and I seized the opportunity to participate in these expeditions, and the three month stay in Arabia became a milestone in our student years (Fig. 2).

At that time Geoffrey Bibby had just published his *Looking for Dilmun* (1969) in which he gave a preliminary summary of the extensive excavations at Qala'at al-Bahrain, the capital of Dilmun, the temples at Barbar, the burial mounds in Bahrain and the trading settlement on Failaka in Kuwait. With broad strokes he painted a first sketch of the land of Dilmun, attempting to integrate the early history of the Gulf countries into a wider picture of the ancient world.

Today, more than forty years after *Looking for Dilmun* first appeared, most of the Danish excavations in the land of Dilmun have been properly analyzed and published. Based on detailed studies of pottery and stamp seals we now have a more reliable chronology for Dilmun and thus a much improved framework for synchronizing the Gulf with Mesopotamia. It is therefore easy to dismiss Bibby's speculation that a layer of ash at the city wall of Qala'at al-Bahrain might be related to King Sargon of Akkad's campaign down the Gulf, c. 2300 BC¹ (Bibby 1958: 162), when it rather appears that the ashes derive from bread ovens, perhaps used to feed the workmen building the city wall at a much later date, c. 2050 BC (Højlund & Andersen 1994: 470). And while the collapse of the Dilmun civilization is undoubtedly related to a disruption of the Gulf trade, this cannot have been caused by the demise of the urban phase of the Indus civilization (Bibby 1969: 246), since the former took place more than a hundred years after the latter (Højlund & Andersen 1994: 475).

In our attempts to write history based on archaeological excavations we are, however, still facing the same problem as Bibby; that is, our eagerness to interpret and explain sometimes exceeds the possibilities of the available chronological and typological classifications. However, as long as this frustration leads to new raids into the infinite empirical sources we are probably on the right track.

In the following I shall focus on Dilmun's relationship with Mesopotamia at a crucial point in time, c. 1800 BC, at the peak of the Dilmun state and try to show how recent excavations (2008, 2009 and 2010) carried out on the island of Failaka in Kuwait may throw light on this critical time, just prior to Dilmun's collapse.

The two main phases of Dilmun

For both Oppenheim and Bibby Dilmun was a rather stable and unchanging entity during most of the late third and early second millennia BC. However, after being sorted with the latest pottery- and stamp-seal-dating-tools, the archaeological evidence that has been uncovered during almost sixty years of excavation in the Gulf indicates a rather different picture of Dilmun, i.e. not one of long-lasting neutral market facilities, but that of two very different social formations which replace each other by the end of the third millennium, Qala'at al-Bahrain period I (c. 2250-2050 BC) and Qala'at al-Bahrain period II (c. 2050-1800 BC) (Højlund 1989).

The appearance at the beginning of period II, c. 2050 BC, of a fortification wall around the capital city of Dilmun, Qala'at al-

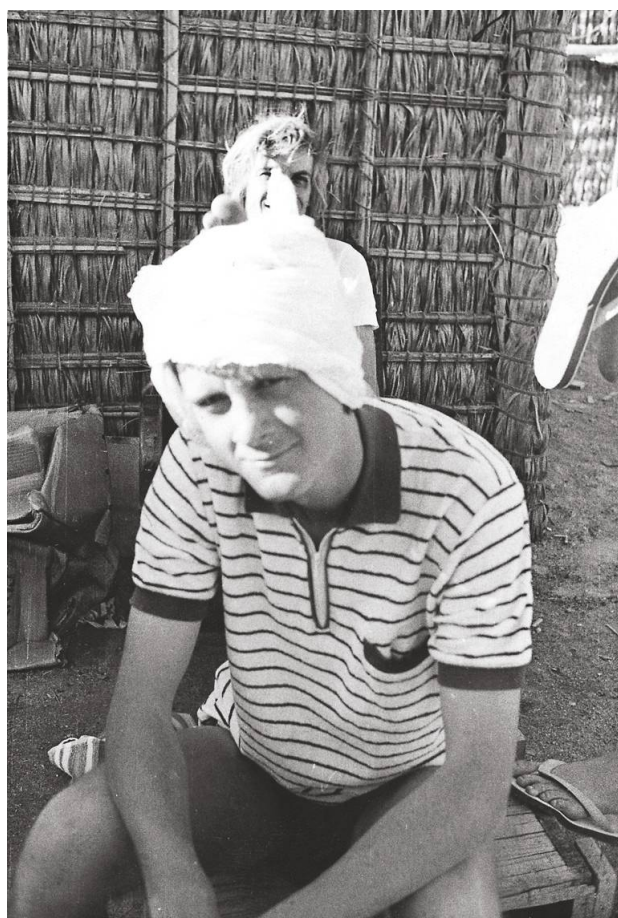


Fig. 2 Kristian in the camp at Qala'at al-Bahrain 1970. Photo: Stine Wiell.

Bahrain, the building of temples at Barbar, Umm as-Sujur and Sar, the introduction of stamp seals, the gigantic storage buildings in the centre of Qala'at al-Bahrain, and the enormous so-called 'Royal Mounds', all indicate a society completely different from that of the preceding period I. Period II Dilmun shows all the signs of being an early state: institutionally complex and hierarchically organized with a central authority (Højlund 2007: 123).

Period I Dilmun lacks these marks of early statehood, and the archaeological material seems to reflect a simpler, kinship-based society, though with signs of rank differences between different social groups. One of these groups whose burials occupied central Bahrain, between Aali and Rifa'a, were distinguished by a number of elite burials in mounds with an outer ring wall, and it is probably from this high ranking segment that the later royal lineage stems (Laursen 2008; Højlund et al. 2008).

Whereas the first of these social formations, dating to period I, seems to have been rather stable over a period of several hundred years (c. 2250-2050 BC), the second, dating to period II, was highly dynamic, and its dramatic development can be followed through three sub-periods, periods IIa, IIb and IIc, covering the centuries from c. 2050 to c. 1800 BC.

The dynamic development of the Dilmun kingdom

The dynamic development of the Dilmun kingdom can be deduced from an increase in investment in public buildings during periods

¹ The absolute dates in this article follow the Middle Chronology (Brinkman 1977).

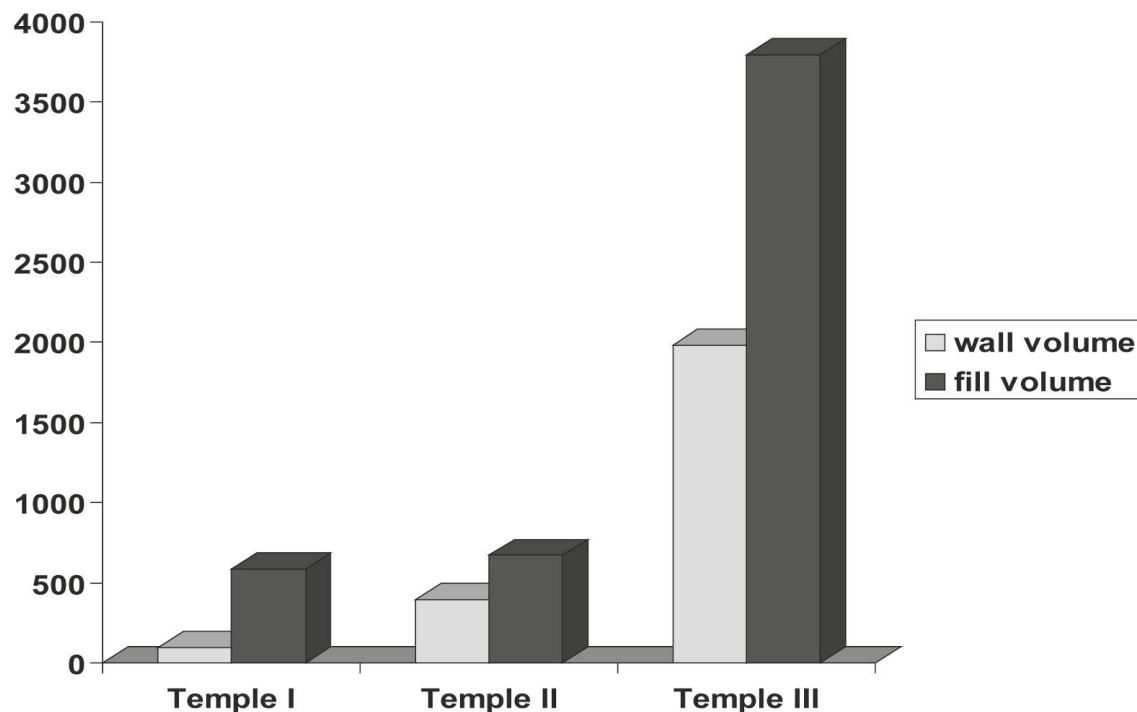


Fig. 3 The volume in m³ of the central platforms of Barbar Temples I-III.

Ila, b and c. Such investments were relatively modest in period Ila. The construction of the city wall around Qala'at al-Bahrain does comprise a great volume of stone, but the building technique is simple and would have been mastered by most capable farmers. The real dramatic change occurred in period IIb and IIc when public architecture such as the temples at Barbar, the great warehouses in the centre of Qala'at al-Bahrain and the elite burial mounds in Aali became monumental and dependent on the cutting and transporting of large numbers of limestone ashlar. This would have required exceptional investments of man-hours, material resources and technical know-how and a political institution able to organise such enormous projects (Højlund in press).

In addition, there is a tremendous increase in the quantities of building materials invested in public buildings through periods Ila-c (Fig. 3). There may also be good reasons for postulating an increased social stratification. In period Ila one 'royal' mound (c. 603 m³) equalled, in terms of volume of stone walls and fill, approximately 24 contemporary, ordinary burial mounds (each c. 25 m³), whereas in period IIc one 'royal' mound (c. 11,500 m³) equalled as many as c. 145 contemporary, ordinary mounds (each c. 79 m³) (Højlund in press)!

A marked increase in the display of royal power in burials versus religious architecture may also be pointed out. One of the early 'royal' mounds equalled in terms of volume of stone walls and fill (c. 603 m³) almost the same as the contemporary central platform of Barbar Temple I (c. 683 m³), whereas one of the latest 'royal' mounds (c. 11,500 m³) (Fig. 4) comprised about twice the volume of stone walls and fill as the central temple platform of the contemporary Barbar Temple III (c. 5,776 m³) (Højlund in press).

There is no evidence for any public building activity in the period following period IIc. No new monumental buildings appear

to have been constructed; the huge warehouses in the centre of Qala'at al-Bahrain were abandoned only to be reoccupied centuries later. On this background it can be concluded that a centralized state organization ceased to exist in Bahrain after period IIc, c. 1800 BC.

The Dilmun trading station on Failaka

In 1958 a Dilmun settlement was discovered on the island of Failaka in Kuwait. It came as a surprise since Failaka lies 400 km from Bahrain and in fact closer to the South Mesopotamian cities of Ur and Larsa, but it is significant that the Failaka Dilmun settlement dates to the beginning of the second millennium, contemporary with period IIb in Bahrain, when the Dilmun state was on the rise (Højlund 2007: 12)! This is the period when the cuneiform records of Ur and other cities in South Mesopotamia make it quite clear that the trade from the southeast, from the lands of *Meluhha* (Indus) and *Magan* (Oman and UAE), was in the hands of Dilmun merchants (Oppenheim 1954), either Babylonian merchants specialising in this trade or the Dilmunites themselves. It was to support this trade that the Dilmun settlement on Failaka was founded, in all likelihood, by colonizers from Bahrain.

The Failaka settlement comprises two contemporary tells: Tell F3 with rows of small houses for individual families, and Tell F6 with two large buildings (Fig. 5). One of these, without doubt a temple, was excavated by a French mission in the 1980s (Calvet & Pic 2008). Though the monument had been robbed of its valuable limestone ashlar and razed to its foundations, enough was preserved to interpret the building as a temple in the Dilmun tradition (Kjærum & Højlund in press). The other large building was excavated by a Danish mission in 1960-63. The original interpretation of this building as a palace with administrative functions (Glob 1968:132; Kjærum 1986:79) rests on its size



Fig. 4 'Royal' Mound N at Aali, Bahrain under excavation 2010. Photo: Uffe Rasmussen.

(c. 500 m²) which is considerable compared to the domestic dwellings in Tell F3 (c. 11-60 m²) and on its general structure, the long corridor leading up to an inner gate giving access to a large pillared hall. For several reasons, the 'Palace' is, however, more likely a production and storage facility related to the nearby temple (Kjærum & Højlund in press).

Ongoing excavations (planned for 2008-2012) aim to clarify the relationship between these two obviously important buildings which so far have only been generally dated to the early second millennium BC. An excavation trench at the southeast corner of the 'Palace' revealed a stout clay floor put down in connection with the construction of the building, and deposited on this floor there was a sequence of thin layers containing a homogenous artefact assemblage of stamp seals and pottery.

Several seals belong to Kjærum's Style II (Fig. 6), and it has been proposed that this style is influenced by the use of the point drill technique of Mesopotamian cylinder seals which first appeared towards the end of the reign of Hammurabi (1792-1750 BC) (Kjærum 1980:46; Al-Gailani Werr 1986:463).

The pottery assemblage from the sequence above the floor contains several holmouth rims of type B19 which is a diagnostic type for Qala'at al-Bahrain period IIc (Fig. 7) (Højlund & Andersen 1994: 130, fig. 392). This assemblage clearly pre-dates Failaka period 3A, which is characterized by a substantial import of Mesopotamian pottery that can be cautiously dated to the reign

of Hammurabi's son, King Samsuiluna (1749-1712 BC).² A preliminary study of the seals and pottery thus indicates that the first phase of the 'Palace' belongs to the late reign of Hammurabi.

During this period Hammurabi succeeded in uniting all of Mesopotamia into a single empire ranging from the Gulf in the south and way into Syria in the north. This expansion resulted in economic development and increased wealth of the Mesopotamian population (Microop 2005:83), an ideal situation for Dilmun as supplier to the Mesopotamian market. Perhaps this is the context in which one should understand the construction of a large-scale production and storage facility such as the 'Palace'.

Hammurabi's unification of Mesopotamia may thus in the first place have resulted in a booming Gulf trade, but it may in the longer run have brought the seeds of destruction for Dilmun. Hammurabi's conquest of the city-state of Mari (1760 BC) opened up for import of copper along the Euphrates from Anatolia and Cyprus, which in the end damaged Dilmun's longstanding role as supplier of copper to South Mesopotamia. A crucial cuneiform text from Samsuiluna's fifth year contains the earliest reference to copper from Cyprus (*Alasia*) in South Mesopotamia, and at the same time this text gives the last mention of copper from Dilmun for several centuries (Millard 1973: 212-13. Crawford 1996: 16).

² One of the diagnostic period 3A shapes, Failaka type 61A (Højlund 1987:71-76), appears at Tell ed-Der first during the reign of Samsuiluna (Gasche 1998 et al.: 29). At Isin, which was abandoned c. 1720 BC, it has been found in a grave containing a tablet dated to Hammurabi year 39 (i.e. 1752 BC) providing a terminus post quem, and the burial was cut from a level in which the latest texts were dated to Samsuiluna year 26 (i.e. 1724 BC) (Gasche et al. 1998 note 140; Højlund 2007: 13, note 8).

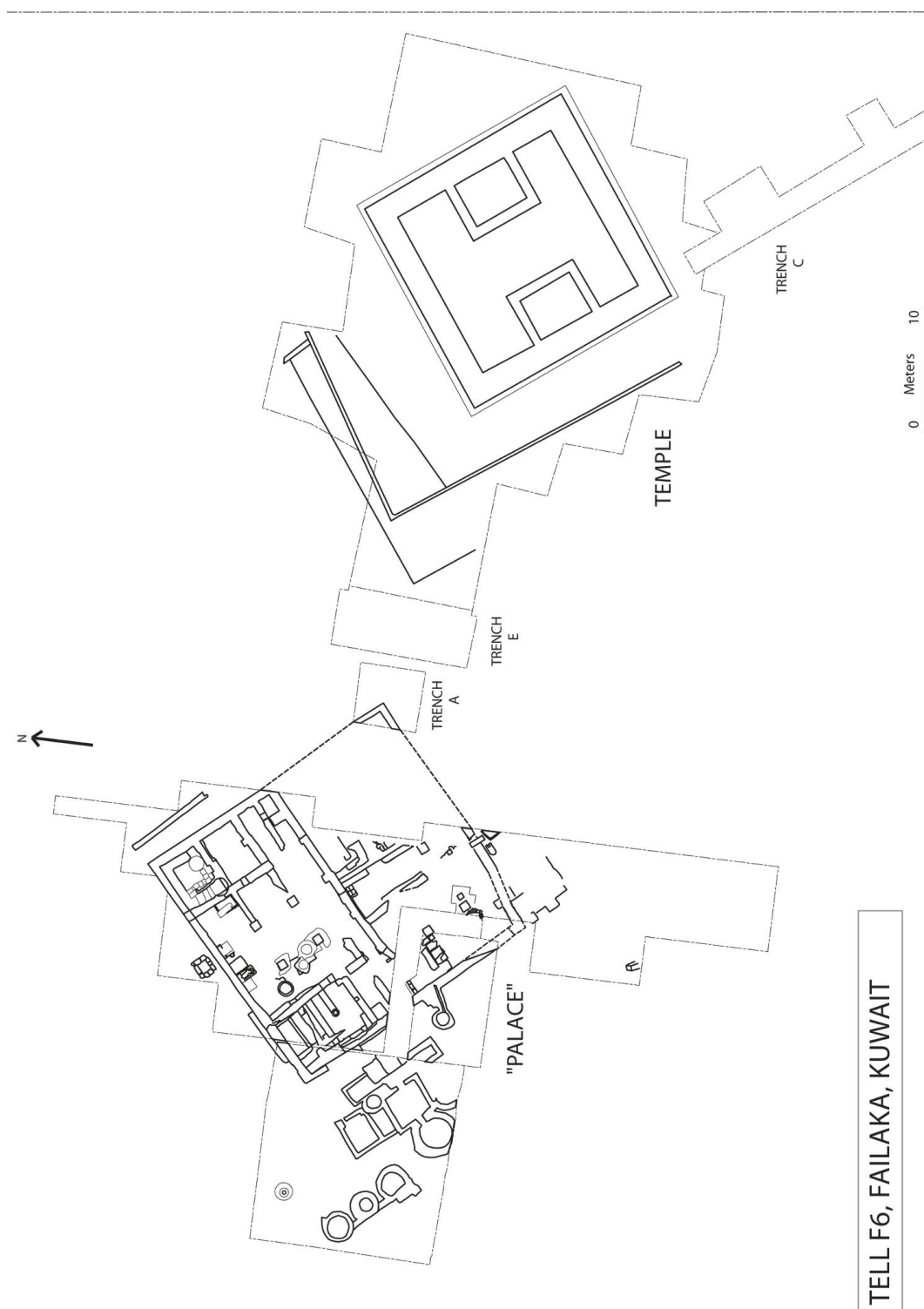


Fig. 5 Tell F6 on Failaka with the 'Palace' (left), the temple (right) and the Kuwaiti-Danish 2008-2010 excavation trenches marked (A, E and C).

It may therefore not be coincidental that the 'Palace' is abandoned after Hammurabi. In the new excavations at the 'Palace' site not a single sherd can be referred to period 3A, i.e. the time of Samsuiluna, and from the previous excavations in the building only sporadic finds from period 3A have been made (Højlund 1987:139-40), though a whole new quarter of private houses in Tell F3 are inhabited in this period. It is reasonable to see this as a consequence of the collapse of the Dilmun state after Hammurabi.

Final caution

However, before we let ourselves get carried away by the enthusiasm of being able to relate archaeological assemblages in the Gulf with political leaders in Mesopotamia, and before we continue to speculate on an alliance between Hammurabi and the King of Dilmun³ we need to examine in detail the proposed

³ Cf. the slightly earlier diplomatic relations between the Assyrian King Shamshi-Adad and the King of Dilmun (Eidem & Højlund 1993).



Fig. 6 Dilmun stamp seals of Style II from the Kuwaiti-Danish 2010 excavation. Photo: H  l  ne David-Cuny.

connection between Style II of the Dilmun seal tradition and the point drill technique of Mesopotamian glyptics. Can we trust this dating criterion, and how should we interpret this Mesopotamian influence on Dilmun glyptics? In fact, a research programme has already been set up, and there should be opportunities to answer these and many other questions following the two excavation seasons at Tell F6 on Failaka in 2011 and 2012.

Acknowledgements

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Abbreviations

AAE: Arabian archaeology & epigraphy. Blackwell.
JASP = Jutland Archaeological Society Publications. Moesgaard. Aarhus.
PSAS = Proceedings of the Seminar for Arabian Studies.

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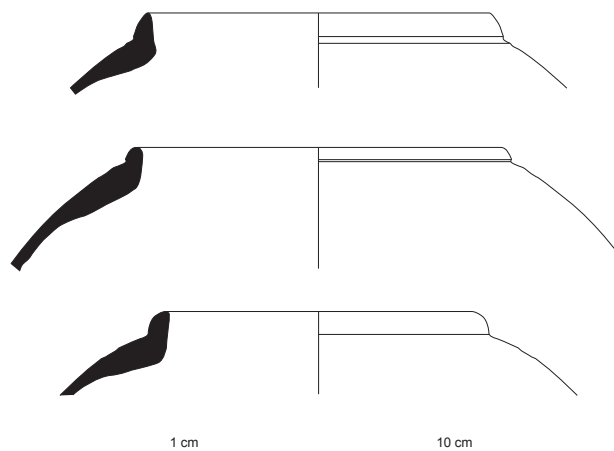


Fig. 7 Holemouth rims of type B19 found at the 'Palace' on Failaka.

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LEAVING SAFE HARBOURS: MOVEMENT TO IMMOBILITY, HOMOGENEITY TO DIVERSIFICATION. A COMPARATIVE ARCHAEOLOGICAL SEQUENCE FROM THE WESTERN PACIFIC

Matthew Spriggs

Abstract: At the end of The Rise of Bronze Age Society, Kristiansen and Larsson called for 'a contextualised search for historical and evolutionary regularities in the formation of particular histories'. In reading the book and other works by Kristiansen I have been struck by parallels across the other side of the world during a period of rapid sociocultural change as the Lapita culture spread by sea from its proximate homeland in the Bismarck Archipelago, just off the eastern end of New Guinea, out as far as Tonga and Samoa in western Polynesia around 3,000 years ago. The reaching of Lapita's eastern margins was shortly followed by a radical diversification of cultures across what had been during colonization a homogeneous cultural and linguistic space. The question is posed as to whether the exploration of apparently parallel cultural sequences can usefully be developed into a comparative archaeology.

Keywords: Comparative Archaeology, Pacific Lapita Culture, Neolithic and Bronze Age Europe

The crucial problem is: On what scale does evolution take place? This can only be answered by considering production and reproduction within the larger spatial framework on which it depends (Kristiansen 1982:245)

Introduction

Kristian and I first met in around 1976 and have stayed in touch ever since. We have shared interests in the development of Marxist perspectives in the archaeology of large-scale sociocultural transformations, both heavily influenced in that regard by the early work on social reproduction of the anthropologist Jonathan Friedman (see especially Friedman 1975, 1981, 1982). This influence is implied in the quotation given above. I was privileged to be able to read *The Rise of Bronze Age Society* (Kristiansen & Larsson 2005) in manuscript in 2003. As I read the book I kept marking passages within it in pencil with 'cf. Lapita' where I detected striking parallels between the archaeological sequences they were describing across prehistoric Europe, and those I and others have been involved in constructing at what is currently a much sketchier level of detail for parts of the western Pacific (see Fig. 1 for Lapita culture distribution).

Kirch (2000) has produced the only relatively recent synthesis of this material, but that book is now more than a decade old, a period during which a major renaissance in Pacific archaeology has occurred. Thus the results of more than a decade of intensive research are not widely available beyond specialist regional journals, most of them not held in the cash-strapped Archaeology department libraries of Europe.

I will make much of the Lapita cemetery and settlement site at Teouma on Efate Island in Vanuatu (see Fig. 1 for location), discovered only in 2004 (for general summaries see Bedford et al. 2006, 2009, 2010). This is not only because I am involved in its investigation, but also because it is, to date, the earliest Lapita

cemetery discovered among the more than 200 Lapita sites that are known. Its window into Lapita ritual is unique, but also suggestive of what further significant finds will tell us. One notes ruefully the number of Bronze Age burial sites known in northern Europe and how the insights they have provided have allowed synthesizers such as Kristiansen to construct the kinds of detailed narratives now available. In the Pacific we can only dream!

Here I want merely to give an example of a suggestive parallel sequence from a period of rapid sociocultural change which began in the western Pacific with the spread of the Lapita culture from its proximate 'homeland' in the Bismarck Archipelago, the islands just to the east of New Guinea, out as far as Tonga and Samoa in western Polynesia. This cultural expansion took place just at the turn of the second and first millennia BC. Lapita appeared in the Bismarcks at about 1400 BC, and spread beyond there sometime in the period 1250-1050 BC, most likely around the latter end of that range (Bedford & Sand 2007). It thus overlaps (just!) with the Bronze Age developments Kristiansen and Larsson (2005) discuss for Europe. The culture is notable as being the first to extend human settlement out into the Pacific beyond the main Solomons chain, thus crossing the boundary between what are known as 'Near' and 'Remote' Oceania.

The Lapita culture is an extremely homogeneous phenomenon in material culture terms, instantly recognizable on the basis of its characteristic dentate-stamped pottery (Kirch 1997; Spriggs 1997: Chapter 4). It also appears to represent the spread of a single language community, Proto-Oceanic Austronesian (Pawley 2002; Ross 2008). Upon reaching its eastern margins in the Tonga-Samoa region of western Polynesia, we then see a rapid diversification

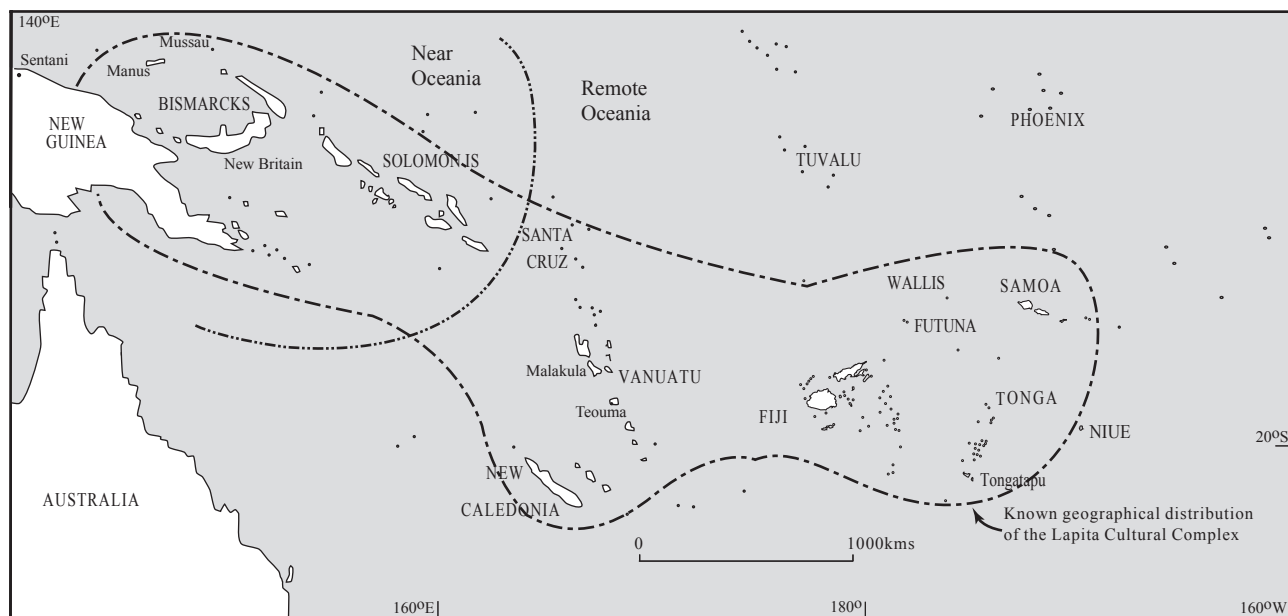


Fig. 1: The distribution of the Lapita Culture in the western Pacific, showing the boundary between Near Oceania (settled c. 50,000 BP) and Remote Oceania, where Lapita represents first human colonization around 3000 BP (map courtesy of Stuart Bedford).

of cultures across its several thousand kilometres range (Spriggs 1997: Chapter 6).

The European parallels I want to comment on are the earliest northern European chiefdoms of the Middle Neolithic and the start of the Bronze Age as originally summarized by Kristiansen (1982), classic ‘hot spots’ or ‘macroregional phases of conjuncture’ in Helle Vandkilde’s (2007) terms.

Such a description seems equally applicable to the Lapita expansion in the western Pacific. But it is not only these particular European ‘hotspot’ periods that provide the suggestive parallels but also what then transpires in Middle Neolithic B and the Late Bronze Age-Iron Age transition. These phases can be compared to the transformations to post-Lapita cultures across Lapita’s geographical range as I attempt here (cf. Spriggs 2011:522 on the comparable Island Southeast Asian Neolithic).

Hedeager (2000) had earlier made very similar points, drawing on the fifth to seventh century AD Migration period in Europe and the spread of the Germanic animal style, but also extending her observations to bring in other periods of identity formation in Europe as well. As she puts it: ‘during a relatively short period of time a new ritual universe and a new cosmology were established’ (Hedeager 2000:51). Hedeager particularly concentrates on style, which she sees as ‘involved in the creation and maintenance of the socio-cosmological order and as such participates in the legitimization of power’ (Hedeager 2000:38).

In an early formulation Kristiansen (1982) took up Friedman’s (1975) model of evolutionary-devolutionary cycles, drawn from the latter’s reanalysis of the political systems of highland Burma. Given our mutual Marxist interests, it seems a good place to start. Today, devolution does not appear to be an appropriate term to use as in this context it privileges large-scale as opposed to local-scale interactions, as if changes towards the latter are in some sense aberrations along the inevitable road towards ever

greater geographical scales of interaction and integration. We are all perhaps now students of regional or global systems to the extent that we can see that changes in regional systems in one area might well have the effect of creating margins or peripheries elsewhere, where long-distance interactions are either no longer engaged in or where the ‘terms of trade’ have decisively changed. Equally, however, apparent peripheries or margins (in this context also perhaps unnecessarily pejorative terms) may represent local choices, the refusal to continue to engage in long-distance interactions that no longer make sense in changed local contexts.

Leaving safe harbours: Lapita in a nutshell

There is an increasingly vast literature on the Lapita culture but no really current synthesis is available. New finds are outstripping our ability to come up with appropriate interpretive frameworks. For instance, the first Lapita sites on the mainland of New Guinea were only reported in 2011 (David et al. 2011) and there are active large-scale projects targeting Lapita sites in almost every archipelago where the culture is found.

Kristiansen and Larsson (2005:33) argue that the perceptions of mobility and travel during the Bronze Age were completely different than those from historically-known peasant societies, and they stress the importance of travel and of crossing boundaries as sources of power. Similarly, I would argue that the Lapita phenomenon, certainly one of the most rapid colonization events on the planet until modern times at over 4,500 kms in less than 10 generations (cf. Best 2002: 100), is also outside our historic experience. For instance, linguists have argued that it would not have been possible to maintain a single language over the full range of Lapita distribution (Pawley 1981:278), but the evidence is staring them in the face that that is in fact what happened. The breakup of Proto-Oceanic into a large ‘rake-like’ structure of linguistic sub-groups which are archipelago-based rather than forming a nested hierarchy is the result of just such a rapid spread of a single speech community.

It is perhaps even harder for us to conceive that Lapita across its vast range may have constituted a single society; one in which the same person might have been met with in Tonga in one season, seen back in the Bismarcks' homeland within the same year, and then encountered again in southern Vanuatu a year later, and 'at home' in all three contexts. But it may well have been so, given the amount of evidence for movement and exchange that we have (cf. Gosden & Pavlides 1994:167-168).

Voyages outside the Lapita area entirely are also suggested – the presence of New Britain and Manus obsidian as far west into Island Southeast Asia as Sabah in Borneo, and Cebu in the Philippines during the Lapita period is attested (Bellwood and Koon 1989; Chia 2003; Reepmeyer et al. 2011). Most recently a jade artefact probably from the Sentani Lakes area of West Papua has been found on an early Lapita site on Emirau (Mussau Group) in the Bismarcks (Harlow et al. 2012). The degree of mobility and relative ease of travel in this part of the Pacific were not seen again for nearly 3,000 years, represented by the sail- and then steam-ship transport networks which colonialism produced in the nineteenth century. We thus have no **ethnographic** parallels for the nature of Lapita (cf. Ambrose 1978), but there are certainly suggestive **archaeological** ones as we shall see below.

The remarkable homogeneity of Lapita culture in its earliest phases needs to be stressed. There have been major recent changes in our perceptions of the iconography of Lapita pottery, particularly its most complex dentate-stamped designs. Traditionally divided up into a series of regional styles, this can now largely be seen as explained by chronology, representing a later regionalisation. The earliest sites in 'western', 'southern' and 'eastern' Lapita provinces share similar pottery designs, which themselves are no longer as clearly distinct from the earliest 'far western' (perhaps better 'early western') style as they once appeared.

Any putative Lapita diversity can now be seen as illusory once we control for chronology and sampling effects. For instance, rapid regional divergence of material culture occurred once the geographical limits of Lapita were reached. But poorly-dated sites, often palimpsests, have led to this phenomenon being erroneously projected back on to the culture represented by the original expansion. It was once thought that there were very few shell ornaments of classic Lapita forms in New Caledonia (Green & Mitchell 1983) but this has turned out to be merely a sampling problem; the earliest excavations simply did not recover the range of shell ornaments we now know to be there. Similarly, a range of key early Lapita sites around the obsidian sources of the Talasea peninsula of West New Britain almost entirely lack shell and bone assemblages because of acid volcanic soils; clearly here there is a major taphonomic effect that has to be taken into account when comparing assemblages.

Lapita settlements are very much oriented to the sea rather than the land, associated with reef passages and canoe landings, and freshwater sources (Lepofsky 1988). Although often initially small, Lapita settlements where they continue in use for any time always show signs of growth; including into the subsequent cultural phase. Rectangular house forms are attested and in Near Oceania often represent stilt-houses over lagoons, associated with small-island occupation (Kirch 1997). There is a suggestion here of a defensive posture in those already occupied regions of the Bismarcks and main Solomons. But this is not matched by obvious weapons among the material culture inventory. Currently for Near Oceania there are no early Lapita skeletal remains to examine

for evidence of skeletal injuries associated with interpersonal violence.

What were earlier described as Lapita 'faces' (Spriggs 1990) on many of the highly-decorated pots (and in one iteration as turtle faces: Terrell and Schechter 2007) are now better seen as detached ancestral heads, paralleled by the removal of all adult heads from early Lapita burials at Teouma in Vanuatu, their display and subsequent re-deposition in the cemetery space – sometimes inside pots (Valentin et al. 2010, 2011). The iconography of heads on pots, heads physically in pots, and the removal and display of heads and other body parts suggest a relationship between the dead and the living where the dead were not seen as separate from the living community but as continuing participants within it (Valentin et al. 2011). Myths and iconography would have complemented each other (cf. Hedeager 2000:51), but we only have access to the latter.

Despite the homogeneous early Lapita iconography on the pots, very few of them were ever exchanged over any distance; they are generally found close to where they were manufactured (Summerhayes 2000). The design system moved freely, but not the objects on which today we find it displayed. Perishable media such as fabrics, and tattoos on human bodies were perhaps the usual mode by which it moved across the Lapita realm. The exceptional movements of individual pots, though rare, do underline the kinds of networks we are talking about. Thus we find New Caledonian pots from two separate regions of the Grand Terre at the Teouma cemetery in Vanuatu, other pots at Teouma most likely coming either from the Solomons or Bismarcks (Bill Dickinson, pers. comm.), and early Tongan pots possibly originating from somewhere in the Solomons-northern Vanuatu region (Burley & Dickinson 2010).

These display vessels present a series of complex forms such as dishes on attached or free-standing pottery stands and carinated vessels often of large size. At perhaps a more domestic level are a series of incised vessels, often carinated and relatively small in size, with related designs including occasional heads. Generally plain, rounded cooking vessels are also common in sites.

It has already been mentioned that Bismarcks' obsidian has been found in Island Southeast Asia, but it is also a regular component in Lapita sites in the south-east Solomons and down to central Vanuatu (Reepmeyer et al. 2010), with occasional finds in New Caledonia and Fiji as well. But what role did it play in these areas? Largely consisting of simple flakes, it is clear that any functional purpose it may have had could have been undertaken using local materials. Indeed in the post-Lapita period obsidian never travels as far again. Obsidian from even local sources to the immediate north in Vanuatu in the Banks Islands that could have directly replaced supplies from the Bismarcks were only distributed across small distances; never again did this locally-sourced obsidian appear in central Vanuatu sites, for instance. The rare specialized 'gravers' of obsidian found in sites in Vanuatu and elsewhere in Lapita contexts appear to have been used for tattooing by piercing skin with an application of charred plants or mineral pigments, which are found mixed with blood on their retouched points (Kononenko 2012).

It has long been suggested that the value of obsidian in Lapita times was that it evoked the Bismarcks' 'homeland'. Its continued exchange across much of the Lapita zone helped maintain affective links back to that homeland (Green 1987). As Kristiansen and Larsson have put it in another context, building on the work of

the anthropologist Mary Helms: 'Often travel to distant places corresponds to time travel to the origin of ancestors, making ancestors and the mythical past an ingredient of the present that can be reached through travel' (Kristiansen & Larsson 2005:40).

Tim Thomas has stressed the importance of the voyaging canoes themselves in relation to the later colonization of eastern Polynesia beyond the Lapita area:

The capacity to produce voyaging canoes, or navigate them at sea, not only was a source of pride or *mana* but also had social value in its ability to lead to access to tangible material resources (fishing grounds, goods on other islands, payment for service). Voyaging also had the potential to confer and legitimise social control through associations with ancestral power and the supernatural (T. Thomas 2001:30).

We can extend his insight back to Lapita times as well. The ability to mount a colonizing expedition or expeditions to settle new archipelagos was not an option open to everyone. The voyaging canoe is a complex piece of technology, whose construction and navigation in the Pacific were universally associated with ritual and esoteric knowledge and practices. Access to canoes, navigation, food stores, crew members and so on 'was determined by status, lineage and/or which experts were in the service of which chiefs' (T. Thomas 2001:32). The key components were the canoe itself and the ability of navigators to find and re-find islands. This was necessary in the initial phases of Lapita settlement at very low population densities in order to maintain links back to more populous centres for the supply of spouses and recruitment of followers, and to continue to access ritual specialists and specialties, and objects of exchange.

Friedman (1981, 1982) was the first to identify Lapita as a prestige-goods economy relying on canoe transport, and it seems hard to imagine any other basis for the chiefly system that is suggested both by the linguistic reconstructions as well as the economic costs of maritime colonization. In Earle's (1997; cf. D'Altroy & Earle 1985) terms this was a wealth finance system. There is no evidence - indeed in early phases of settlement there was no necessity either - for intensive agriculture. A staple finance system (Earle again) thus seems out of the question.

The prestige goods were both tangible and intangible, the former consisting of shell ornaments, obsidian (if it wasn't present as merely a by-product of some other form of interaction) occasional pots, and perhaps fine mats or bark cloth and exotic bird feathers for head-dresses as seemingly depicted on Lapita pots; also the voyaging canoes themselves, of course. The intangible prestige goods could have included new rituals and dances, and technical and religious specializations - the two usually go together in the Pacific - such as canoe-making, navigating, tattooing, adze manufacture and so on (T. Thomas 2001).

The chiefs were able to monopolize long-distance travel because it was expensive (the 'costs' of canoe-building and skilled navigation) and required much ritual as well as technical preparation. Such a monopolization led to control over prestige goods as well as over provision of marriage partners, to the extent that this required recruitment from outside the immediately local area.

The evidence from the Teouma early Lapita cemetery shows, following the ideas of Barrett (1994), that it was not so much a place to separate the living from the dead but rather a place

of transition. It represented the creation of a place where the dead were actively present, 'enabling them to be physically encountered, handled or displayed during the course of ancestral rites' (Barrett 1994:51).

The activities in Neolithic Britain described by Barrett (1994) and others seem very similar to those that are indicated at Teouma (see Valentin et al. 2010, 2011 for details): the revisiting and reopening of burials, the removal of bones, the placing of bones of one individual with those of another, the reordering of otherwise articulated remains, collections of bones arranged by anatomical part, an unrelated jaw in association a skull and so on. In Britain such ancestor rituals were 'concerned with invoking the presence of the dead in order to structure, and provide sanction for, activities amongst the living' (J. Thomas 2000:655).

Bringing it all back home: transmissions and transformations

The rapid diversification of regional material culture signatures in Lapita immediately its geographical limits had been reached is not coincidental. Whatever the stimulus was for this remarkable colonizing expansion, it must have been materialized to a great extent in the decorated Lapita pottery, shell ornaments and other aspects of material culture that give early Lapita its distinctive and homogenous signature. As soon as that stimulus waned, the material culture too changed to a series of initially still recognizably Lapita, but more locally distributed, sub-styles. The geographical range of Lapita culture in fact rapidly contracted back towards its Bismarck Archipelago 'homeland', and it may well be there that it continued the longest as a material culture recognizably descended from its roots (Summerhayes 2000).

Pottery

Changes in the pottery are the most dramatic. What in another context would be called the 'fine' pottery component drops out: the technique of dentate stamping becomes more roughly exercised; the complexity of designs decreases and the whole design system breaks down; complex vessel forms such as dishes on stands, complex carination and rim forms, and the larger-sized vessels all disappear. Instead, we are left in many areas with an assemblage continuing only the simple cooking vessel forms of Lapita rather than the display vessel types, and with minimal or no decoration at all on the pots. The iconographic 'silence' of the immediately post-Lapita settlement that spreads over the top of the Lapita cemetery at Teouma is deafening, with a complete lack of decoration beyond rim notching replacing the elaborate dentate and incised Lapita pots of the cemetery and its associated settlement.

Where decoration beyond rim notching does continue, simple Lapita motifs are reproduced for a while longer by incision and in a schematic form compared to the originals, before completely different stylistic vocabularies emerge. From about 2,000 years ago pottery starts to disappear entirely from parts of the former Lapita area, earliest in southern Vanuatu, then across Western Polynesia in the early centuries AD, and later across central Vanuatu as well by about AD 800 or earlier (Spriggs 1997).

Settlements

Settlements become larger and settlement density increases after Lapita, presumably as a result of natural population increase, and then there is a change to dispersed inland-oriented settlement. At the same time long-distance exchange of obsidian and other

items ceases across most of the former Lapita area. Manufacture of the large range of Lapita shell ornaments – also perhaps widely circulated as part of marriage and other ceremonies (Kirch 1988) – diminishes considerably in the post-Lapita period. What was essentially a single Proto-Oceanic Austronesian language began to break up into a series of archipelago-specific subgroups. There are mass extinctions of some of the exotic fauna encountered by the first Lapita colonists: in Vanuatu, for instance, the land crocodiles and large land turtles disappear within a couple of hundred years of settlement (White et al. 2010), as do many species of often-flightless birds. Instead, there is a growing concentration on the raising of domestic pigs and chickens as alternative protein sources; the former also presumably requiring an augmentation of agricultural production to feed them. Further ecological degradation and/or transformations are witnessed by the reduction in size of collected marine shellfish, and pollen and geomorphological evidence of hillslope erosion and increasing alluvial deposition across former reef flats, leading to coastal progradation. It seems that some locations were abandoned after this initial human impact, not to be reoccupied for a millennium or more. Their reoccupation marks perhaps the transition to a full-land situation, where increasingly marginal areas had to be brought back into use (Spriggs 2010).

Burial practices

Changes in burial practices in Late Lapita and post-Lapita phases are particularly instructive. In Vanuatu the shift can already be seen at the late Lapita cemetery on Vao Island, Malakula (Bedford et al. 2012). Here we find simple inhumation and no post-burial manipulation of bodies or removal of heads. This is the pattern too in late and immediately post-Lapita burials across the western Pacific, including in a separate post-Lapita cemetery at Teouma itself, dated to about 450 BC (Valentin et al. 2011).

The burial of intact bodies represents a shortening of mortuary activities to a single archaeologically-visible moment, a change from a process of transformation to an event of deposition (cf. J. Thomas 2001:157). It represents both a changing relationship between the living and the dead and a societal change. Again, ideas taken from the British Neolithic provide a possible interpretation: ‘The burial of single persons as distinct events suggests that descent rather than simply group membership was now the most significant principle of social ordering. Social identity would then start to take on a narrative rather than an inclusive form: each person would locate him- or herself in a genealogy leading back into the past, rather than a community existing in the present’ (J. Thomas 2001:156).

Lifestyle

The combined evidence points to a move from a mobile to a much more sedentary lifestyle. Lapita started with small and scattered pioneering populations relying heavily on high levels of interaction for their survival. In post-Lapita times we see a transformation into larger self-sustaining communities whose identity and economic and social existence focused increasingly on the local (Pawley 1981; Spriggs 1997:152-162). During this process they literally ‘settled in’ to their island homes, with evidence of significant inland populations from about 500 years or so after initial settlement in some areas.

Friedman (1981, 1982) was wrong in seeing ethnohistorically recorded prestige-goods systems of the eighteenth- and early nineteenth centuries in the Fiji-West Polynesia area as being a

conservative continuation of Lapita forms of socio-political organization, as pointed out by Nicholas Thomas (1989:92-93). The same collapse of the prestige goods system occurred in these areas as elsewhere in the post-Lapita period. The time depth as revealed by archaeology for the historically-recorded wealth finance systems is of the order of 1,000-1,500 years in West Polynesia and even less in much of Fiji (Best 2002:71). Vanuatu and New Caledonia too came to be impacted by this reopening of long-distance interaction (Spriggs 1997: Chapter 7; Valentin et al. 2011:62).

As populations grew and became more locally rooted, the continued need and support for long-distance travel declined – spouses were available locally and exotic goods were replaced by local equivalents as islands were explored and their resources logged. It was not so much that the exchange monopoly was broken, but that the costs of long-distance maritime exchange came to outweigh the benefits perceived by communities in its continuation. Exchange didn’t shift elsewhere with new partners in some notional ‘centre’ cutting off the supply of desired goods; it simply stopped. As Tim Thomas (2001:41) has put it in regard to the exactly parallel situation in the much later first settlement of eastern Polynesia: ‘society from this time was increasingly being created and reproduced at a domestic level’. Chiefs found alternative ‘cheaper’ means of controlling their populations.

Sociopolitical systems shifted from wealth-based to staple finance, with control of productive land becoming crucial across the Lapita area where chiefly power persisted. There is evidence of the development of intensified taro irrigation agriculture in some areas particularly in the western Solomons, New Caledonia, Fiji and parts of Vanuatu (see Spriggs et al. 2012 for an overview), and intensive and productive swidden systems developed elsewhere such as in Tonga. For other areas of Vanuatu, the Solomons and the Bismarcks where intensified agricultural systems have not been recorded, the basis for chiefly power was curtailed and more egalitarian political structures developed, as new dynamics between leaders and led developed.

From analogy to comparative archaeology?

Of course, neither the Neolithic nor Bronze Age developments in northern Europe can be mapped on to the Lapita case to suggest entirely homologous processes. But given the importance of boat transport claimed for both areas, a simple dichotomy between an island and a continental situation is also perhaps not enough to disqualify comparison. Neolithic communal burial practices in Britain have already been invoked to help understand the Pacific sequence, and similar practices are a notable feature of the transition from the Early to the Middle Neolithic in northern Europe as well. Variants of prestige-goods economies were found in all three cases. As Kristiansen has written of the Neolithic case: ‘The monopolisation of valuable prestige items and the mobilization of surplus production for ritual and feasting was [sic] the basis of local alliance networks’ (Kristiansen 1982:259).

For Bronze Age northern Europe it was monopolization over the nascent bronze supply and production that provided the basis for chiefly power, backed by the prestige given by the exotic nature of this material and other valued exchange products through the ‘endless reconversion of economic capital into symbolic capital’ (Kristiansen 2007:70).

Somewhat underplayed by Kristiansen and Larsson (2005; but see most recently Kristiansen 2012) is the possibly attendant

spread of a new language or closely related languages around the middle of the second millennium BC, in the form of a late stage of Proto Indo-European. As with Lapita it would have not just been the spread of a new language but along with it a wide range of concepts of kinship, social organization and religion across a wide area. Whether such a language spread could have been accomplished by diffusion/adoption rather than by migration of a significant number of speakers is also subject to much argument (see papers in Bellwood and Renfrew 2002).

For the Bronze Age we find the rapid spread of an international iconography, linked by Kristiansen and Larsson (2005: Chapters 6 and 7) to the spread of particular religious ideas and appearing on a range of artefact types of foreign origin or inspiration, new body culture and dress codes, new architecture, a new warrior lifestyle and a new social organization of warfare. The spread was so rapid that, 'Archaeological dating methods are not accurate enough to cope with the spread of Bronze Age interaction' (Kristiansen and Larsson 2005:179 fn. 7).

In Lapita we have a fully-attested migratory expansion – again extremely rapid - with a largely-novel material culture, an international iconography displayed on fine pottery, long-distance exchange as part of a prestige-goods economy, certainly the spread of a new language and its attendant concepts of kinship and social organization (including chiefly terminology), a new body culture of body ornamentation, a presumably new architecture – we have no earlier architecture to compare it with in the region, but no evidence of warfare in terms of material culture or skeletal injury. This last perhaps represents the advantage of moving rapidly into previously uninhabited areas! We find (in admittedly the single early cemetery we have) communal burial rituals where the ancestors were seen to be active participants in a continuing relationship with the living, as in some Neolithic societies in Europe.

If we examine the two periods following on from the establishment of chiefly systems at the beginning of the Middle Neolithic and the Bronze Age of northern Europe we find similar transformations to more locally-based socio-political organizations as are seen post-Lapita. Kristiansen described for Middle Neolithic B:

a gradual decrease in communal ritual and use of votive offerings, and a decline in the production of fine pottery for ritual and funerals that was replaced by simple domestic pottery...while at the same time settlements became larger. Interregional exchange ceased (Kristiansen 1982:261).

He details too a shift to single burials in small local lineage or family mounds. The changes were brought about because mobilization of surplus production and monopolization of prestige goods were no longer possible in a situation of rising population and increasing competition for land once the areal limits of productive settlement had been reached.

For the Later Bronze Age, Kristiansen stresses it was certainly not just a replay of what had happened during the Neolithic, as the economic system had changed to a pastoral focus in the meantime. But again some comparable processes seem to have taken place, with agriculture intensifying in a progressive shift away from wealth to staple finance. This was perhaps beyond what was ecologically sustainable and thus eventually necessitated a transformation of the entire regional system (Kristiansen 1982:262). In the succeeding early Iron Age, we see a return to a much more local focus because sources of iron were widespread

in Europe and thus 'the whole cosmological order linked to distant ancestors and powers' was rendered moot (Kristiansen & Larsson 2005:366). These authors suggest evidence for uprisings and revolution. Once the separation could be made between 'the interlocked nature of power and religion' that had existed during the Bronze Age, then 'it paved the way for a new dynamic between leadership and subordinates, between hierarchy and heterarchy' (Kristiansen & Larsson 2005:367).

Towards the end of Lapita and into the post-Lapita period we find similar processes as described for Middle Neolithic B and with a reasonable degree of parallelism too with the later Bronze Age and the early Iron Age of northern Europe. A similar turn from an 'international' to a local focus with the collapse of prestige-goods economies is found in all three cases. In the Neolithic case relevant factors included population increase and increased competition in a situation of apparent pressure on land. In the Bronze to Iron Age case it seems that local availability of a new metal technology meant that long-distance connections no longer had to be sustained; an ecological crisis may also have been part of the mix. In the Lapita case it seems to be that population increase had the positive result of allowing a more sedentary, island-specific lifestyle. Local availability of spouses and resources led to the cessation of long-distance exchange.

In all three cases the burden of sustaining long-distance exchange was no longer tolerable to the general populace in a situation where their immediate needs could now more certainly be met locally. The previously 'necessary' exotic goods and the associated religious ideas that justified that necessity were no longer salient. Chiefs had to find another basis for power or were destined to lose it. There may have been a shift to systems of competitive feasting underpinned by chiefly control of agricultural intensification - where such was sustainable. Consonant with this shift are more individual-focused burial practices suggesting a growing concern with transmission of land between generations.

Conclusion

I have suggested here the viability of a comparative archaeology of processes taking place during what Vandkilde (2007) has termed 'macroregional phases of conjuncture' and – most importantly – during their immediate aftermath when the systems transform again to a more local focus. The answer to Kristiansen's 1982 question quoted at the beginning of the paper is that evolution takes place in some circumstances in cycles of large-scale interaction often followed by very local-level processes becoming dominant in reaction to them. All of Vandkilde's examples were European, including those discussed in addition by Kristiansen. From the Pacific I have sketched a further example and could have discussed others – the much later settlement of eastern Polynesia is a particularly salient comparison (T. Thomas 2001). Specialists in other regions could doubtless add many more.

Given the importance of burials for the narratives Kristiansen and Larsson tell of the Bronze Age, the example of Teouma – found only in 2004 - illustrates why our conceptions of Lapita are still so sketchy. This also illustrates why Pacific archaeology has not yet taken its rightful place in World prehistory discussions. The major advances of the past decade, however, presage that the time is not far off.

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MYSTERIOUS RAW MATERIAL FROM THE FAR NORTH: AMBER IN MYCENAEAN CULTURE*

Janusz Czebreszuk

Abstract: In the second millennium BC the Mycenaean culture, together with that of the Hittites, Mitanni and Egypt, was one of the most important elements of the civilization networks of the eastern Mediterranean. One of the features that distinguishes the Mycenaean culture from others is the presence of amber, which has occurred in a great number of finds. Furthermore, based on physicochemical analysis, most examples appear to have been of Baltic amber (succinite). Our current knowledge shows us that in this period amber may not always have been sourced from the Baltic area, but we do know for certain that it at least came from regions north of the Aegean. Important questions concerning the presence of amber in Mycenaean culture are discussed in this article. Where did the amber come from, and how was it used? The different types of amber artefacts in Mycenaean culture are also considered.

Keywords: amber, Baltic, Mycenaean culture, amber route

Outline of research history

The question of the presence of amber in Mycenaean culture has been studied since the excavations by Heinrich Schliemann, who, investigating Circle A of the Shaft Graves at Mycenae, discovered the first amber artefacts as early as in 1874 (Schliemann 1878). Not only were they the first to be discovered, but they were also the most spectacular in terms of both typology and quantity.

Subsequent investigations produced more finds at Mycenae (Shaft Grave Circle B, see Mylonas 1973) and other localities concentrated mostly on the Peloponnese. The following features should be highlighted in this context: Dendra, chamber tomb 10 (Persson 1942); Kakovatos, tholos A (Müller 1909); Kaukaunara, tholos 2 (Marinatos 1958); Nichoria, tholos 'Veves' (Harding & Hughes-Brock 1974); Peristeria, tholos 2 (Marinatos 1962); Pylos, tholos IV (Blegen et al. 1973); and Routsis, tholos 2 (Marinatos 1957).

Hence, after the middle of the twentieth century, the amount of information on the presence of amber in Mycenaean culture was substantial. What remained unknown, though, was its origin, and the fundamental question was whether it was Baltic amber (succinite) or some other fossil resin, or whether the material known from the Aegean had heterogeneous origins.

The question was answered by Kurt W. Beck, who introduced a new method of infrared absorption spectrometry into the study of physicochemical structure of amber (Beck, Wilbur & Meret 1964). With the help of this method, he showed that Baltic amber had a special kind of spectrum, clearly different from that of other fossil resins. Using this method, he embarked on a project of systematic examination of amber artefacts excavated in Greece (Beck 1966, 1970, 1996; Beck, Fellows & Adams 1970; Beck & Shustak 1982; Beck, Southard & Adams 1968; 1972). The results proved beyond any doubt that a vast majority of the artefacts from the most spectacular Mycenaean finds were of Baltic origin.

The results of Kurt W. Beck's studies underpinned the first

comprehensive report on Mycenaean amber by Anthony Harding and Helen Hughes-Brock in 1974. One of their major achievements was the compilation of the first catalogue of amber in the Aegean and adjacent areas. Covering Mainland Greece, Crete and other islands, it comprised in total 61 localities where at least 153 assemblages including amber had been recorded (Harding & Hughes-Brock 1974, Tab. 1). In total, these authors recorded at least 3,411 amber artefacts in the Aegean (Harding & Hughes-Brock 1974, table 1).

The next years witnessed the discovery of more sites with amber; these were, however, single finds or comprised several artefacts at most.

Current state of research

The current data, after verification and a bibliographical query, look as follows. In Mycenaean culture, amber is known from 223 locations (Fig. 1). Depending on how specific the available information is, we can tell if these are single burials in collective tombs, complete tombs, cemeteries or sites. All these places yielded at least 3,523 artefacts; however, this number is rather low, allowing for the vagueness of information from many sites (e.g. grave 53 in Ialisos (Rodas) – Maiuri 1926:221, grave S2 in Medeon (Focis) – Papadimitriou 2001:115, chamber tomb in Theby – Harding and Hughes-Brock 1974:166). What is peculiar about them is the fact that in terms of the number of locations with amber finds, unequivocally dated to one of the three phases of Mycenaean culture only (Table 1), the classic phase of the Mycenaean culture (1420-1200 BC) is the best represented, followed by the late phase (1200-1060 BC) and trailed by the early one (1700-1420 BC). A different picture is obtained when the phases are ordered in terms of the number of amber artefacts known from each of them. Here, the Early Mycenaean culture comes first, followed by the classic phase and trailed by the late one (Harding & Hughes-Brock 1974, table 2).

A vast majority of locations where amber was found, regardless of the chronological phase, are sepulchral sites. Within them, there are about 200 locations in which amber was recorded. Initially (Early Mycenaean period), these were shaft graves and tholoi (Fig. 2). In the classic phase, amber was still found in tholoi,

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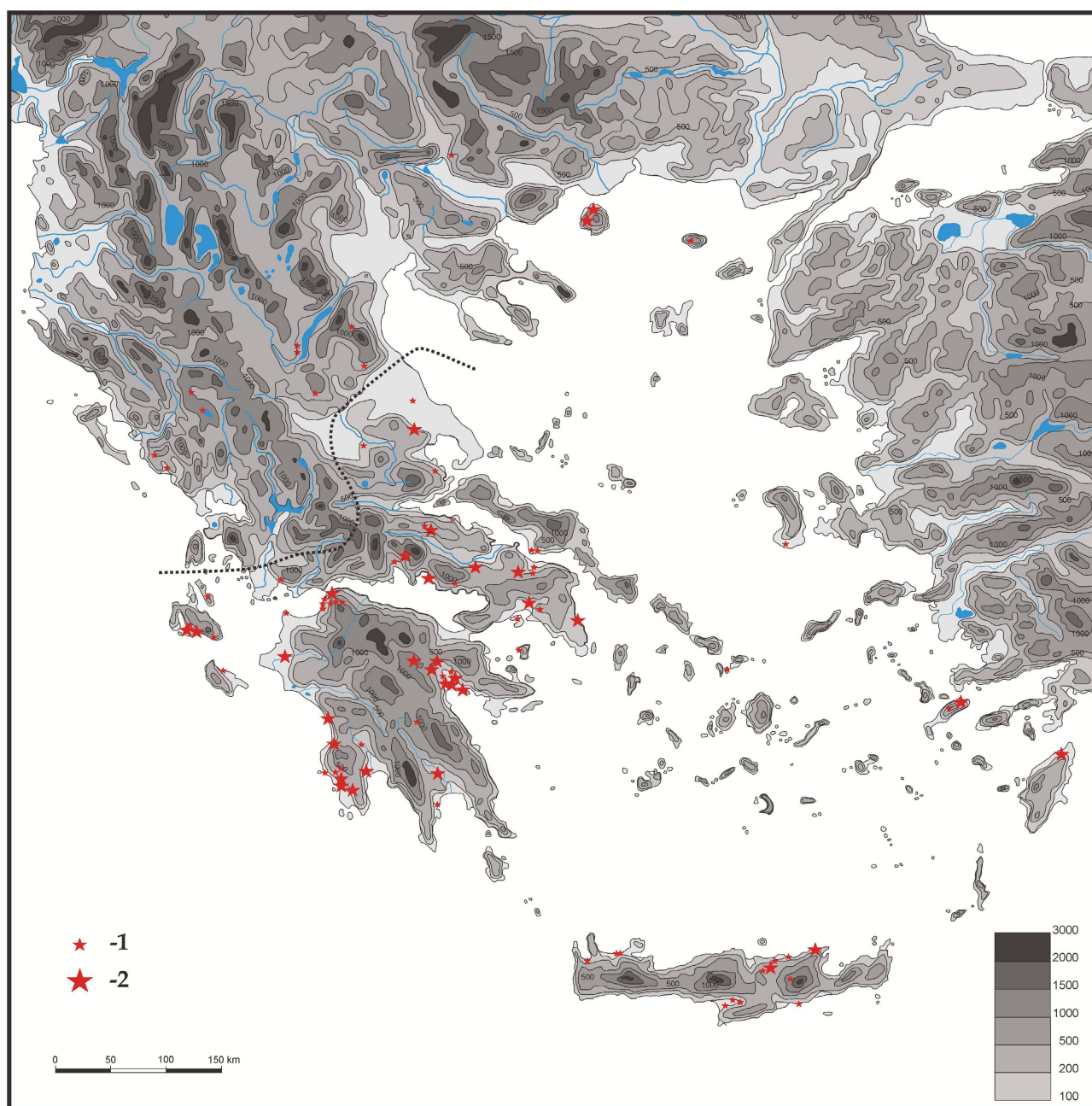


Fig. 1 Overall diffusion of amber finds in the Aegean. 1 – single amber finds; 2 – more than one amber object found (Czebreszuk 2011, fig. 15).

although chamber tombs dominated (Fig. 3). In the late phase of the Mycenaean culture most finds were located primarily in the latter (Fig. 4). The changes in deposition locations must have been the cause of the discrepancy between the number of artefacts (greatest in the early phase) and the number of sites (greatest in the classic phase). In the early phase, amber was known chiefly from shaft graves, which survived intact until modern times, while in the classic phase, amber occurred predominantly in tholoi and chamber tombs, which for the most part had been robbed already in antiquity (Czebreszuk 2011:123). It can therefore be safely assumed that the greatest number of amber goods were used and deposited in the classic phase of the Mycenaean culture.

There are very few settlement finds (i.e. comprising only objects that were lost) or ones originating with votive contexts. Among

votive finds, emphasis should be put on the presence of amber in the sanctuaries at Delphi and on Delos – both devoted to Apollo in the Greek world. This is an important clue pointing to the mythological contexts of amber (specifically, its solar connotations). On the other hand, we know of Apollo's northern connections (his mother's birthplace, ties to the Hyperboreans; see Bouzek 2007).

Regarding typology, beads strongly dominate, of which there are over a dozen varieties (Czebreszuk 2011:77-92). The most common are spherical flattened beads (comprising at least 759 in total, for all data see: Czebreszuk 2011), followed by lentoid (256), annular (179) and spherical beads (149). Less frequent are ellipsoid (24), bicone (30), cylindrical (18), barrel-shaped (21) and Tiryns-type beads (38). Finally, single specimens of other types

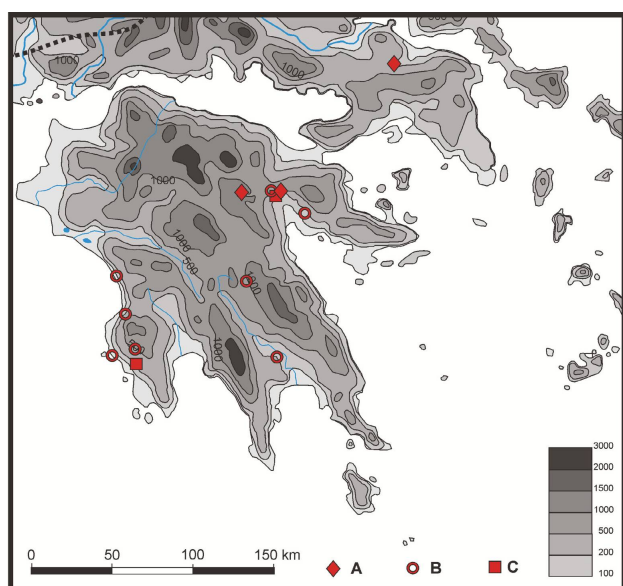


Fig. 2 Amber finds dated only to the early phase of the Mycenaean culture (from this period from grave finds only). A – chamber tombs; B – tholoi; C – shaft-grave circles (Czebreszuk 2011, fig. 22).

are known as well, such as Allumiere (2) or amygdaloid beads (10). Other types of amber goods associated with the Mycenaean culture include pendants, discs and the most spectacular spacer-plates (with simple and complex arrangements of perforations), both flat and others (Czebreszuk 2011: 92-97).

Some of the types are chronologically significant. For example, spacer-plates are found only in the Early Mycenaean culture (between 1700 and 1420 BC) while beads of the Tiryns and Allumiere types concentrate in the late phase (1200-1060 BC) (Harding & Hughes-Brock 1974; Czebreszuk 2011).

In terms of geography, we observe a continuous spreading of amber within the Mycenaean *oecumene*. In the early phase, it is found only in the Peloponnese (plus one find from Thebes in Boeotia), especially in Argolis and Messenia (Czebreszuk 2011, fig. 22). By the classic phase, amber had spread throughout the Mycenaean world as far as southern Thessaly in the north and Crete in the south (Czebreszuk 2011, fig. 23). In turn, after 1200 BC, amber goods are found in regions directly bordering on the Mycenaean world, in particular in the north. At the same time, amber becomes significantly more sparse in the Peloponnese – an area where the material was found earlier in the greatest number of places (Czebreszuk 2011, fig. 24).

Highly meaningful in this respect, the changes in amber

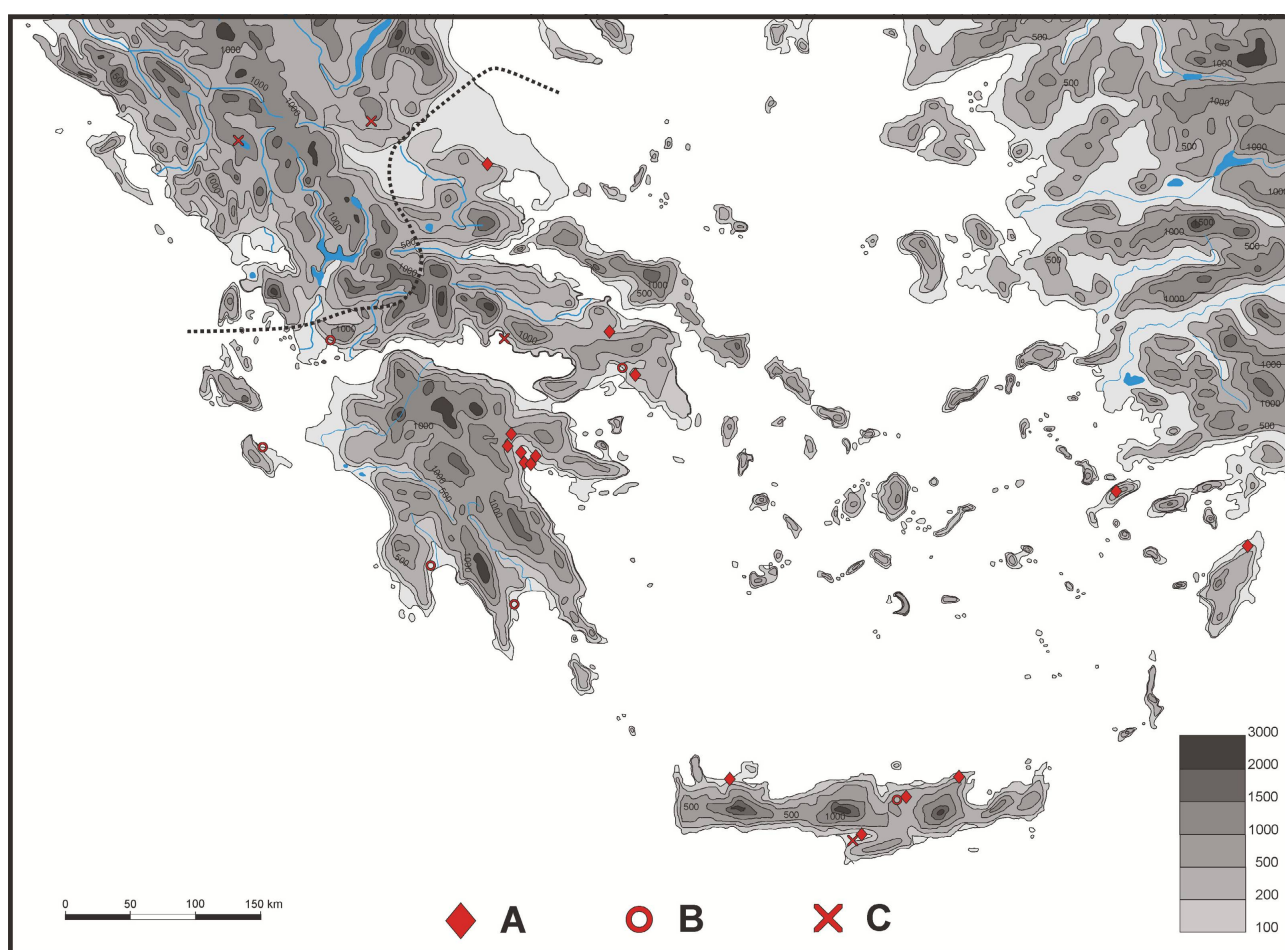


Fig. 3 Grave finds comprising amber artefacts assigned to the classic phase of the Mycenaean culture. Finds identified only as coming from a burial ground/grave have not been included. A. chamber tombs; B – tholoi; C – other grave types (Czebreszuk 2011, fig. 28).

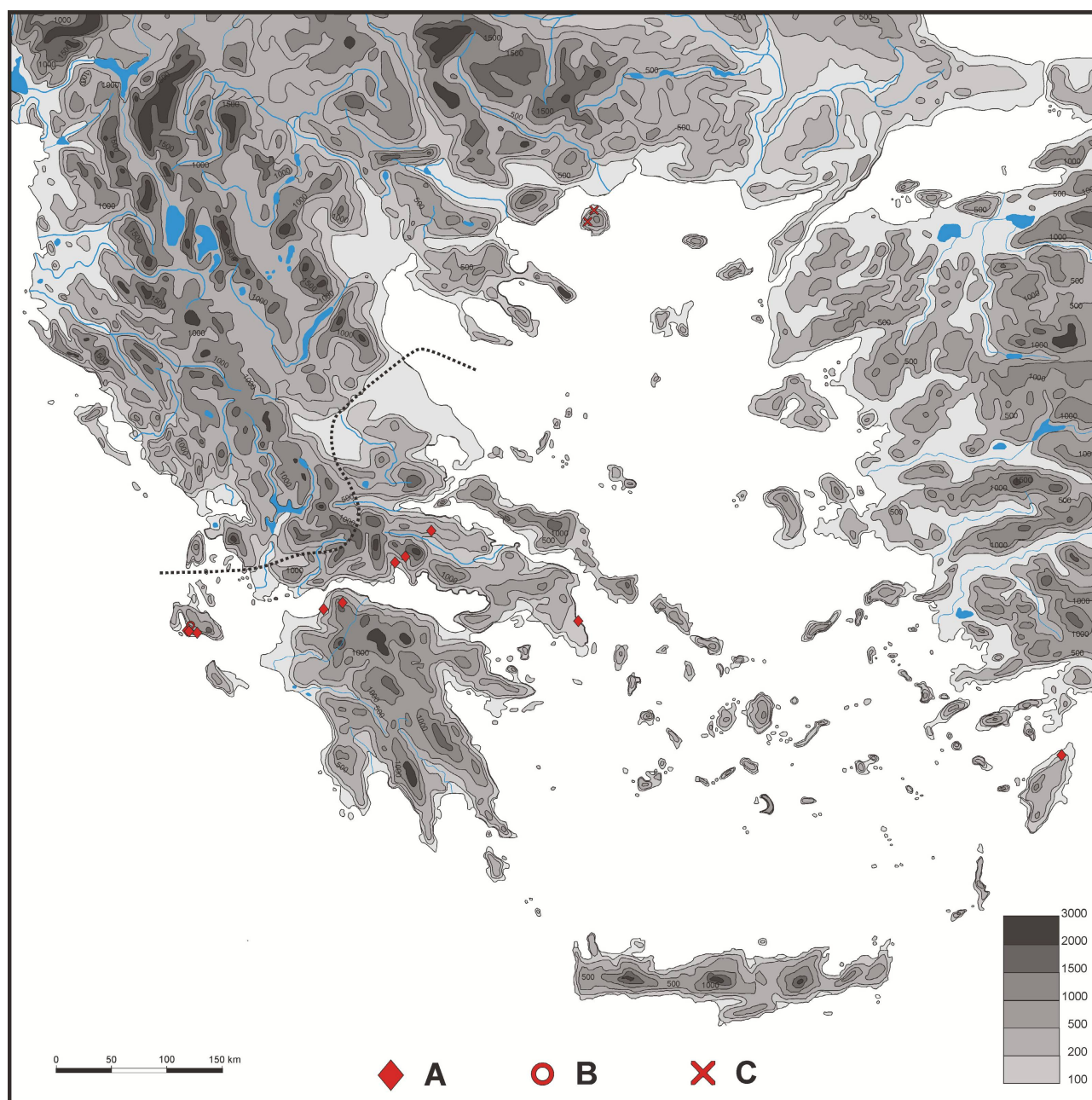


Fig. 4 Grave finds comprising amber artefacts assigned to the late phase of the Mycenaean culture. Finds identified only as coming from a burial ground/grave have not been included. A. chamber tombs; B – tholoi; C – other grave types (Czebreszuk 2011, fig. 29).

presence on Crete (Table 1) follow the changes in sovereignty over the island. For the Early Mycenaean period, when Crete was still Minoan, we do not have any reliably dated amber finds (Czebreszuk 2011, table 13). The same is true for the Late Mycenaean phase. Only in the classic phase, when the island was controlled by the Mycenaeans and the Mycenaean culture was in full bloom, are many amber finds recorded on Crete.

Amber routes to the south

The question of the transfer of amber from the Baltic coast to the south must have been a highly complex one (Kristiansen & Larsson 2005:236). Nonetheless, owing to major progress made in research, it was possible to take up the issue of cultural mechanisms and ways of Baltic amber transfer to the south,

especially to the Aegean. The issue has been widely discussed in the literature under the heading of the study of amber routes (see the classic work by J.M. de Navarro, 1925). At present, in the literature on the subject, several versions of the amber route in the Bronze Age are discussed (Fig. 5). They are as follows:

- a. The westernmost sea route, passing west of southern Italy, reaching the southern coasts of France and Spain, following the Atlantic coasts of Portugal, Spain and France as far as the British Isles. The route could have been closely tied to the import of Cornish tin. Amber, in this case, was a side factor (Czebreszuk 2011:158).
- b. A western sea and land route which took a similar course as far as the mouth of the Rhone, where its land part began, and

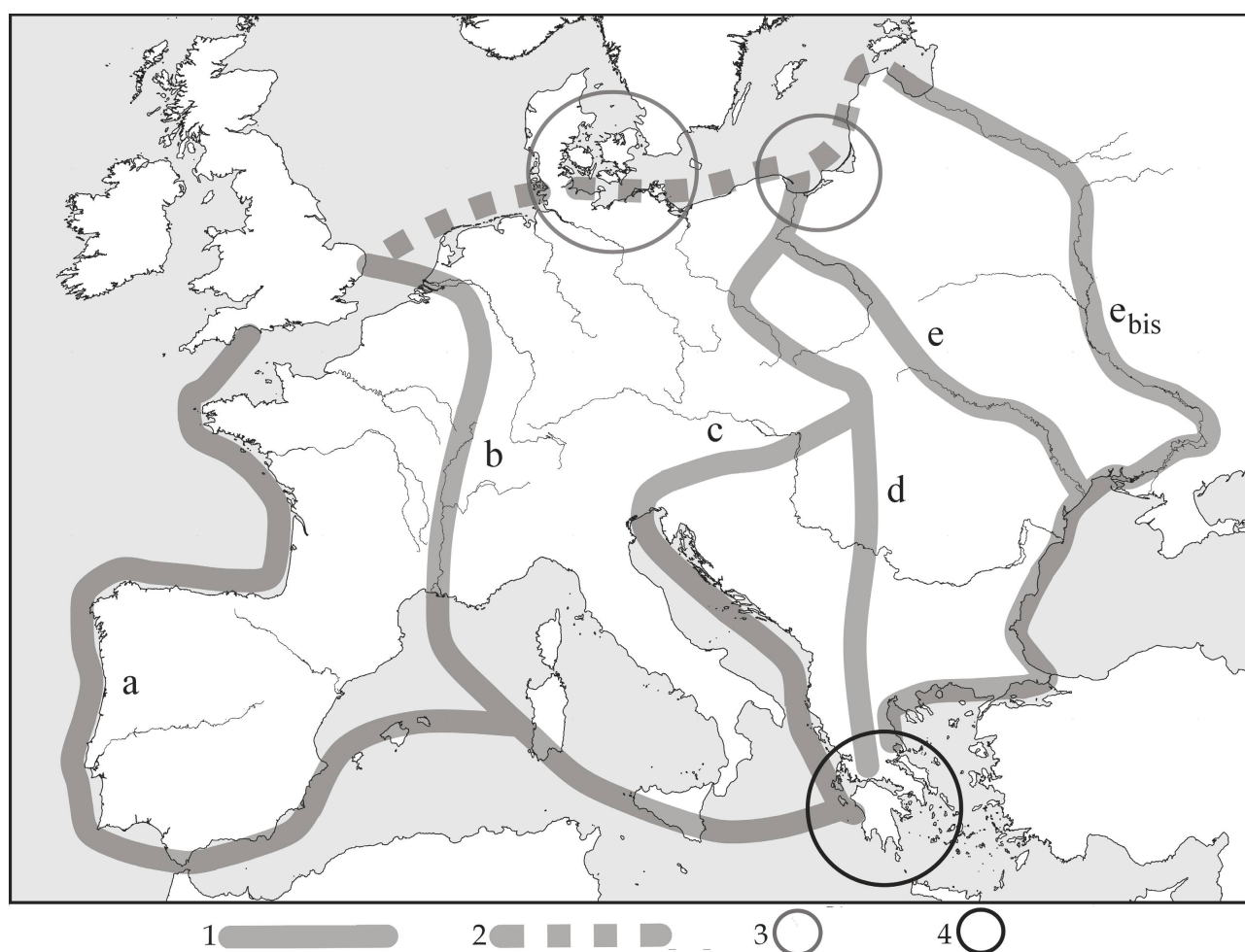


Fig. 5 The routes that Baltic amber followed to reach the Aegean (Czebreszuk 2011, fig. 32).

followed the river north until the basin of the Rhine to cross the channel to England or follow the coast of the North Sea as far as Jutland (Bouzek 2007).

Both routes were associated with the mythical ‘Hercules’ Route’ (Evans 1928:170), which is linked by the cited author to the spreading of, above all, tin v-perforated buttons and copper halberds in the Aegean (Evans 1928:169-174).

c. A central sea and land route which followed the eastern coast of the Adriatic as far as the region of *Caput Adria*, where its land leg began. The course of the sea leg has been absolutely uncontroversial since the 1920s. Both J.M. de Navarro (1925) and A. Evans (1928:174) were in full agreement on the issue. Their view has been reiterated by later researchers in the literature on the subject (Harding 1984; Czebreszuk 2009). However, more difficult issues, namely the course of its land leg and destination in the north, remain unsettled.

d. A relatively rarer conception concerns a land route only, crossing the Balkans as far as the Carpathian Basin and continuing further north (Czebreszuk 2001). Different authors stress the major difficulties it might have encountered, if only the ease with which it could be blocked in many ‘critical points’ as, for instance, numerous mountain passes or river gorges (Bouzek 1985:221).

e. An easternmost sea and land route which crossed the Aegean Sea and the Dardanelles, followed the western coast of the Black Sea as far as the mouth of the Dniester River and continued upstream to the Vistula River basin. The land leg is sometimes plotted even more to the east, taking advantage of the Dnieper and Dvina rivers. This classically eastern outline of the route was suggested by M. Gimbutas (1965, fig. 15, 1985). It may have been especially attractive in the declining stages of the Bronze Age (recently: Harding 2005:299; Czebreszuk 2009).

Most likely several such routes were used at the same time, for it can be assumed that the people who travelled the trans-European routes of the second millennium BC drew on the experience of their predecessors, modifying the network to meet their needs. The most important of such modifications involved the inclusion of the amber-bearing centre on the lower Vistula/Sambia (Czebreszuk 2007) which enabled the British Isles to communicate better with the Continent. In this context, amber could have reached the south by many routes with varying intensity.

This ‘network’ model of amber transfer to the south is substantiated also by the fact that all northern centres (from the British Isles to the south-east Baltic coast) were permanently joined by a route following the coasts of the North and Baltic seas, the beginnings of which reach back to the local Mesolithic (Czebreszuk & Szmajda 2012). Nonetheless, in this context and the current state

Table 1 Chronology of amber finds unequivocally dated to a single period of the Mycenaean culture, by geographical areas

Geographical area	Early phase	Classic phase	Late phase	total
Peloponnesus	34	22	8	64
Central Greece	1	12	13	26
Ionian Islands	0	1	13	14
Islands in the Aegean Sea	0	7	9	16
Northern Greece	0	2	0	2
Crete	0	11	0	11
total	35	55	43	133

of research, it can already be suggested in some cases which routes grew in importance and when this occurred. Two of such cases are undeniably the relationship between the British Isles and the Aegean in the course of the early Mycenaean culture (routes 'a' and 'b'), which is shown by circulation of spacer-plates (Maran 2004; Czebreszuk 2011: 116-123) and ties across the Adriatic when the culture declined (route 'c'), see: dispersion of Tiryns and Allumiere beads (Harding 2000:190-191; Czebreszuk 2009a, fig. 7).

In the studies aimed at reconstructing the cultural mechanism of amber transfer to the south, the most comprehensive model, spanning the broadest territorial range as well, has been proposed by K. Kristiansen and T.B. Larsson (2005, in particular Chapter 5), who have made amber an aspect of the trans-European treks of members of the elite.

Conclusion

Amber, no doubt, carried a special religious and prestige meaning for the societies of the Mycenaean culture. This could be seen especially in the early and classic phases of this culture, when amber occurred chiefly in the richest contexts of shaft graves and tholoi believed to have been the burial places of Early and Classic Mycenaean elites. In the later stage, a tendency can be seen of amber becoming ever more socially available, which is testified to by a large number of finds in chamber tombs. With the Catastrophe of 1200 BC (for a very useful overview see: Dickinson 2006:41-57), the geographical and social distribution of amber changed as well. It became sparser in core Mycenaean regions (particularly on the Peloponnesus) and could be found also in grave types other than tholoi or chamber tombs (Czebreszuk 2011, table16).

Also worth mentioning is the fact that amber was a specifically 'Mycenaean' raw material in the Mediterranean. It did not move freely to other civilization centres of the eastern Mediterranean such as the state of the Hittites, Mitanni, Mesopotamia, Palestine or Egypt, with which the populations of the Aegean maintained constant and lively cultural and trade contacts (Czebreszuk 2011:169-170). The appearance of amber in any of these centres is on each occasion related to the presence of other Mycenaean characteristics.

Equally meaningful, the place of amber within Aegean cultural relationships, in particular between the Minoan and Mycenaean worlds, is illustrated by the fact of its appearance on Crete when the island was overrun by the Mycenaean (Czebreszuk 2011: 67-68); ergo, for the Minoans it did not carry any cultural meaning.

Hence, there is no doubt that the relationship between amber and the Mycenaean culture was rather special and was one of

its identifying characteristics against the background of the network of civilization centres of the eastern Mediterranean. One can venture even further and say that amber clearly indicates that the identifying characteristic of the Mycenaean against the background of the eastern Mediterranean was related to the north. Exactly how far north remains to be answered.

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THE IMPORTANCE OF FOREIGN YOUNG MEN

Anders Andrén

Abstract: The focus of this study is the fundamental importance of loyal military troops in many premodern states and empires. These troops were usually formed by people from conquered regions, by more or less unfree soldiers or by foreign 'barbarian' warriors. In particular, the last category is discussed here, since the flow of young men was very important for cultural transmissions between centres and peripheries. In many cases this flow may also be viewed as a background for later migrations and political conquests of centres by people from the peripheries. Examples are drawn from Scandinavia, central Europe and the eastern Mediterranean.

Keywords: 'barbarian' warriors, loyal military troops, mercenaries, Varangian Guard, warrior graves

About 20 km north of Stockholm, just south of Ed's Church, there is a large boulder with loops of snakes with runes carved on two sides (Fig. 1). In the larger loop one can read 'Ragnvald had runes carved after Fastvi, his mother, Onäm's daughter. She died in Ed. God help her soul'. In the smaller loop it is stated that 'Ragnvald had the runes carved. He was in Greece, he was leader of the retinue' (Wessén 1940, nr. 112).

The runic boulder in Ed, which can be dated to the last third of the eleventh century, is one of many examples mentioning Scandinavians who were recruited to the Imperial Guard and the Imperial Army in Constantinople in the tenth, eleventh and twelfth centuries. The presence of Northmen in the Varangian Guard in *Miklagård* ('the great city'), as the Scandinavians called Constantinople, is well known from runestones, Icelandic texts and Byzantine notices. In the Mälär valley (in central Sweden) alone, 25 stones are known which mention that men had been to, or had died in, Greece. Scandinavians also left a few traces

in the Byzantine Empire, such as runes scribbled in the gallery of Haghia Sophia in Constantinople and a long inscription on a marble lion, which originally stood in the harbour of Piraeus, but in the late seventeenth century was moved to Venice (Bløndal 1978; Larsson 1991).

In connection with events in the 1050s, the Byzantine historian Michael Psellos described the barbaric Northmen as 'appalling in the appearance as well as in the outfit', with blue eyes, long spears and large battle-axes. In particular, the battle-axe that was carried on the shoulder with the edge upwards was a key feature, since Psellos repeatedly speaks of the imperial bodyguard with the wording 'those with the axe on the right shoulder' (Psellos 1984). This particular gesture is also reproduced on a runestone from the large monument at Hunnestad in southern Skåne (Fig. 2). The stone that now is partly destroyed depicts a man with a helmet, a long coat and an axe on the right shoulder. The stone had been erected for two brothers, Ro and Lekfröd, who were sons



Fig. 1 The runic boulder at Ed (after Wessén 1940, plate 74).

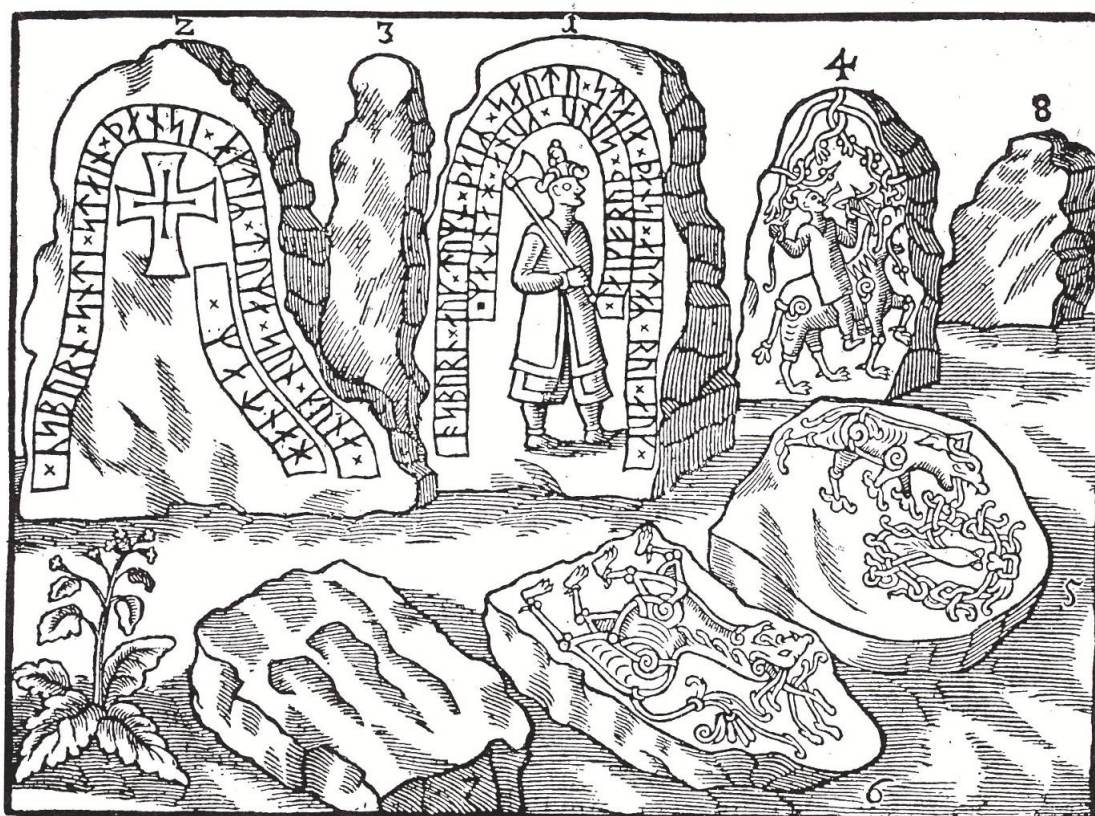


Fig. 2 The runestone monument at Hunnestad in Skåne. The warrior with his axe on the shoulder is depicted on the middle stone (from Ole Worm, *Daniocrum Monumentorum libri sex* [1643] after Jacobsen & Moltke 1941, nr. 670).

of a certain Gunne Hand (Jacobsen & Moltke 1942, nr. 282). It is not directly mentioned that the brothers had been in Greece, but the image of a man with a battle-axe on his shoulder must have conjured associations with the imperial guard in *Miklagård* to eleventh-century viewers.

The most famous of the Varangians was Harald Sigurdsson, who is mentioned in Byzantine as well as Icelandic sources. He came to Constantinople in 1034 with a group of 500 warriors from Scandinavia. This army took part in battles in Sicily, southern Italy, Bulgaria and probably in Asia Minor. After a period in prison, Harald Sigurdsson left Constantinople in 1043. He became King of Norway in 1045, known by the name of Harald Hardrada [the hard ruler], and fell at the Battle of Stamford Bridge in 1066 in an attempt to conquer England. Ragnvald of Ed must have been a well-known person too, because he had been a chieftain of the army, just as Harald had. Aside from this, the name Ragnvald was fairly uncommon in Sweden, and was above all known from aristocratic families during the eleventh and twelfth centuries, suggesting that he was a member of the local aristocracy in central Sweden (Blöndal 1978).

The Byzantine connections are apparent not only from written sources but also from material traces. Byzantine coins, mainly from the period 945-1067, are found in large parts of present day Sweden, especially on Gotland (Hammarström et al. 1989). In Norway in the mid eleventh century the coins were designed following Byzantine models due to Harald Hardrada's Byzantine connections. His political rival, the Danish king, Sven Estridsson, had similar coins of Byzantine inspiration minted in the 1040s and 1050s. Byzantine pottery from the eleventh and early twelfth

centuries has also been found in cities such as Sigtuna and Lund (Roslund 1997). It is also possible that Ragnvald and his descendants in Ed were inspired by Byzantine churches, since the stone church at Ed was probably built like a Greek Orthodox church, without a chancel between the nave and the apse. The church, which was probably built around 1100, was constructed using an early stone technology called *opus piscatum* and represents one of the oldest stone churches in Uppland (Curman & Curman 1958). Thus, the trips to Constantinople taken by young men can be traced through written sources as well as material culture.

If we move further back in time, the texts are fewer or nonexistent, and distant connections emerge only through material culture. One example is the ringfort at Ismantorp, situated in the middle of the island of Öland in the Baltic Sea (Fig. 3). This ruin is the best preserved of Öland's 20 or so ringforts from the middle Iron Age. Even today the long ring wall, around 475 m long, is preserved up to four metres. Nine gates, three being main gates, lead to the interior of the fort, where about 95 house foundations are preserved to the height of 1 m -1.5 m. The centre of the fort consists of a triangular open place, with a semicircular building and a large pole. C-14 datings show that the fort has been periodically used from the third century to the mid seventh century. The place can probably be interpreted as a kind of military camp for the training, organization and initiation of warriors (Andrén 2006).

Ismantorp was clearly modelled on contemporary Roman forts, even though the ringforts on Öland lacked the Roman geometry (cf. Andrén 2006). The Roman camps were used to organize the Roman army in a similar way throughout the empire. In addition,

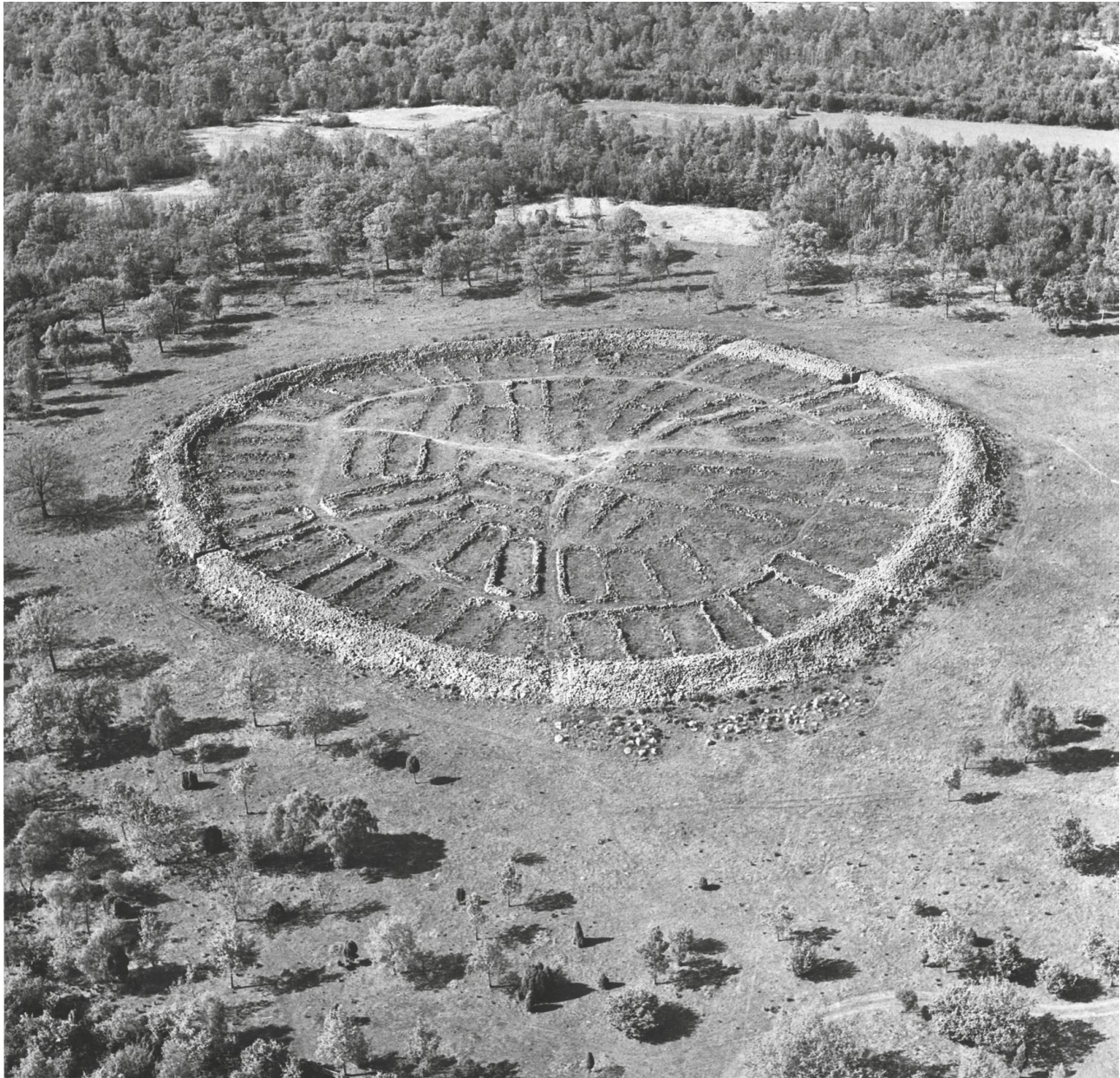


Fig. 3 The ringfort at Ismantorp (aerial photograph in the Antikvarisk-topografiska arkivet (ATA) Stockholm).

they were expressions of the Roman world view, with divisions between heaven, earth and underworld. Two axes divided the camps into four parts, in the same way as the sky was divided into four parts in Roman cosmology. In the centre of a Roman fort was a pit, which represented the entrance to the underworld, but which was also the central point for the planning of a fort. The structure of the Roman forts was therefore a military order inscribed in an imperial cosmology (Rykwert 1988).

Ismantorp can be regarded as a local reinterpretation of the Roman models. The design was different, but the very principle of a military order inscribed in a cosmology was unchanged. The ringfort at Ismantorp is one of the oldest material expressions of Old Norse cosmology, as it was known in later Icelandic texts. The fort can be seen as a representation of the world, Midgard, which in one mythological version was built as a stronghold of the eyebrows of the primeval giant Ymir. As in the Roman camps,

a foundation pit was dug at the centre of the fort, and was used for planning the fort. Just east of the pit is a small semi-circular house and a post hole for a large pole, which stood at the centre of the fort. The post can be viewed as a counterpart to the world tree Yggdrasil in the middle of the world. The fort opened to the outside world through nine gates, and these may be perceived as the nine worlds that surrounded the world tree (Andrén 2006).

For the background to this local reinterpretation of Roman models one may look to the extensive ties between the Roman Empire and southern Scandinavia from the beginning of our era to the fifth century. These connections appear, inter alia, through Roman bronzes and glass in Scandinavian burials, Roman weapons in large weapon deposits, Roman silver and gold coins and the runic writing as a reinterpretation of the Latin alphabet (Fischer 2005). It is likely that relations between the Roman Empire and southern Scandinavia had been maintained in several ways, via

Roman merchants and diplomats in Scandinavia, but also by Scandinavians who joined the Roman army (Lund Hansen 1987). Warriors of Germanic origins were part of the Imperial Praetorian Guard, but were especially enrolled in the Roman auxiliary forces, the so-called Auxilia troops, that were created in the decades before our era. They were open to non-Roman citizens from the empire, but also to foreigners from outside limes, such as the Scandinavians. Just as the later Varangian Guard, Scandinavians may have served in the Roman Auxilia troops, and then returned to Scandinavia with new ideas that were transformed into local applications such as the ringfort at Ismantorp (Lund Hansen 1987; Andrén 2006).

The runic boulder at Ed and the runestone at Hunnestad, as well as the ringfort Ismantorp, are just three of many examples expressing how young men were enrolled in military service outside their own regions. Peter S. Wells and Heiko Steuer have recently, in different ways, tried to fit all of these young men into an overall European pattern, with warriors from northern Europe who enlisted in central and southern Europe (Wells 1999; Steuer 2006). The pattern is known from documents from around 400 BCE, when the Greek ruler Dionysius of Syracuse used Celtic mercenaries in wars against Carthage (Steuer 2006), to the Varangian Guard in Constantinople in the eleventh and twelfth centuries. Wells and Steuer stress that many of these warriors returned home with gold, silver and new ideas, and that they were often organized in specific warrior bands that were separated from the rest of society. These warrior groups, which often had their own names, lived on the proceeds from recurring plunder, war and tributes, and they were often forced to search farther and farther away from their origins to survive. In many cases, these warrior groups returned to the areas where they previously had been recruited as soldiers. Sometimes they conquered the regions, took political control and settled there. Wells and Steuer wish to explain the enigmatic 'migrations' in Europe with this flow of young homeless warrior bands, from the Celtic conquests in the fourth and third centuries BCE, via the Germanic invasions in the fourth and fifth centuries to the Slavonic expansion in the sixth and seventh centuries. Presumably, this flow of young men between north and south also existed before, although it cannot be traced directly through texts. Instead, foreign objects and weapons indirectly show similar patterns as early as in the Bronze Age, for example between southern Scandinavia and continental Europe and between central Europe and Mycenaean Greece (Kristiansen & Larsson 2005).

The Mediterranean world appears in these contexts as a cultural centre for the young men from the north, but parts of the Mediterranean could also be a periphery in relation to other centres. From written sources it is known that Greek warriors served as mercenaries from the seventh century BCE in Assyria, Egypt and Persia (Keeley 1997; Trundle 2004). The most famous case was when the Persian ruler Cyrus the Younger enlisted thousands of Greek warriors in a campaign against his brother, the Persian King Artaxerxes II, around 400 BCE. The campaign is immortalized in the work *Anabasis*, written by the Greek military commander and author Xenophon. As in Europe the recruitment of Greek mercenaries in Persia eventually led to Greek warriors conquering and controlling the entire area where they previously had served. This happened with Alexander the Great's conquest of the entire Persian Empire in the 330s and 320s BCE (Xenophon 1989).

Another much older example of foreign young men in the Mediterranean is the so-called Sea Peoples that ravaged the eastern

Mediterranean in the thirteenth and twelfth centuries BCE. Under the leadership of Pharaoh Ramses II, Egypt defeated some of these groups in 1278, and after the defeat he incorporated the surviving warriors into his bodyguard. Among the Sea Peoples was a group known as Sherden, depicted with horned helmets. The name suggests that they should be linked to Sardinia, and figures of warriors with the same type of horned helmets have been found on this island. Aside from this, a long tradition in pharaonic Egypt was to use Nubian mercenaries called medjai. They were used, inter alia, in the Egyptian defence against Nubia, but as in many other cases the Nubians also succeeded in conquering and taking control of Egypt. In these cases it was thus peripheries to the west and south that were linked to, and strongly influenced by, a centre in the Nile Valley (Spalinger 2005).

The same pattern is known from many other parts of the world. One theme in Chinese history was the conflicts with nomadic people north and west of the Chinese core regions. Often nomadic riders were recruited for the defence of the empire, but in several cases the recruited 'barbarian' warriors took control of the empire. The last time this happened was in 1644, when the Manchu established the Qing Dynasty (Barfield 1989). Even in the new world there is information about the same kind of movement of warrior groups between the periphery and the centre. Aztecs, who dominated central Mexico at the Spanish conquest, originated from enlisted mercenaries by the Tepanecs in the city-state of Azcapotzalco (Keegan 1993).

This recurring feature, the prevalence of young men in foreign service, can be explained by the need of loyal military troops in any premodern state before the system of compulsory military service (Keegan 1993; Keeley 1997; Otto et al. 2006). Different states have solved the dilemma of the loyal soldiers in different ways. Since all premodern empires were so-called conglomerate states, without the need of imagined communities as in modern national states, the armies were usually built up of various ethnic groups that existed in the kingdoms (Fig. 4). In order to link these groups to the ruler the warriors were often stationed far away from their own regions, and their leaders were often married into the family of the ruler. A well known example of this solution was the army of Xerxes in the Persian expedition against Greece, in 480 BCE. The Greek historian Herodotus vividly described how Xerxes mustered his army, with the various warrior groups that distinguished themselves by different attire, by partially different armament and by different riding animals. In the army were, among others, the Persians wearing soft hats, coats and pants; Ethiopians with skins of leopards and lions, and painted bodies; Chalks with helmets made of wood; Thracians with fox-skin caps and coats, mantles and boots made of deer skin; and Pisidians with copper helmets that had ears, horns and textile ornaments. Herodotus describes how the various warrior groups were controlled by men who, in different ways, were related to the Persian king (Herodotus 2004).

Another way to organize loyal military troops was to use more or less unfree men or slave-soldiers. They lacked any legal rights and were therefore only protected by the rulers, who demanded their loyalty. Among the best-known slave-soldiers were the Mameluks, used by Islamic rulers from the ninth century onwards. Many of them were Turkish riders who converted to Islam during their military training. In some cases these slave warriors, like the mercenaries, succeeded in taking power and establishing their own kingdoms, such as the Mameluk sultanate in Egypt from 1250 to 1517. A variation of this system of slave soldiers was the Janitsars, which were the elite troops of the Ottoman Empire from the mid

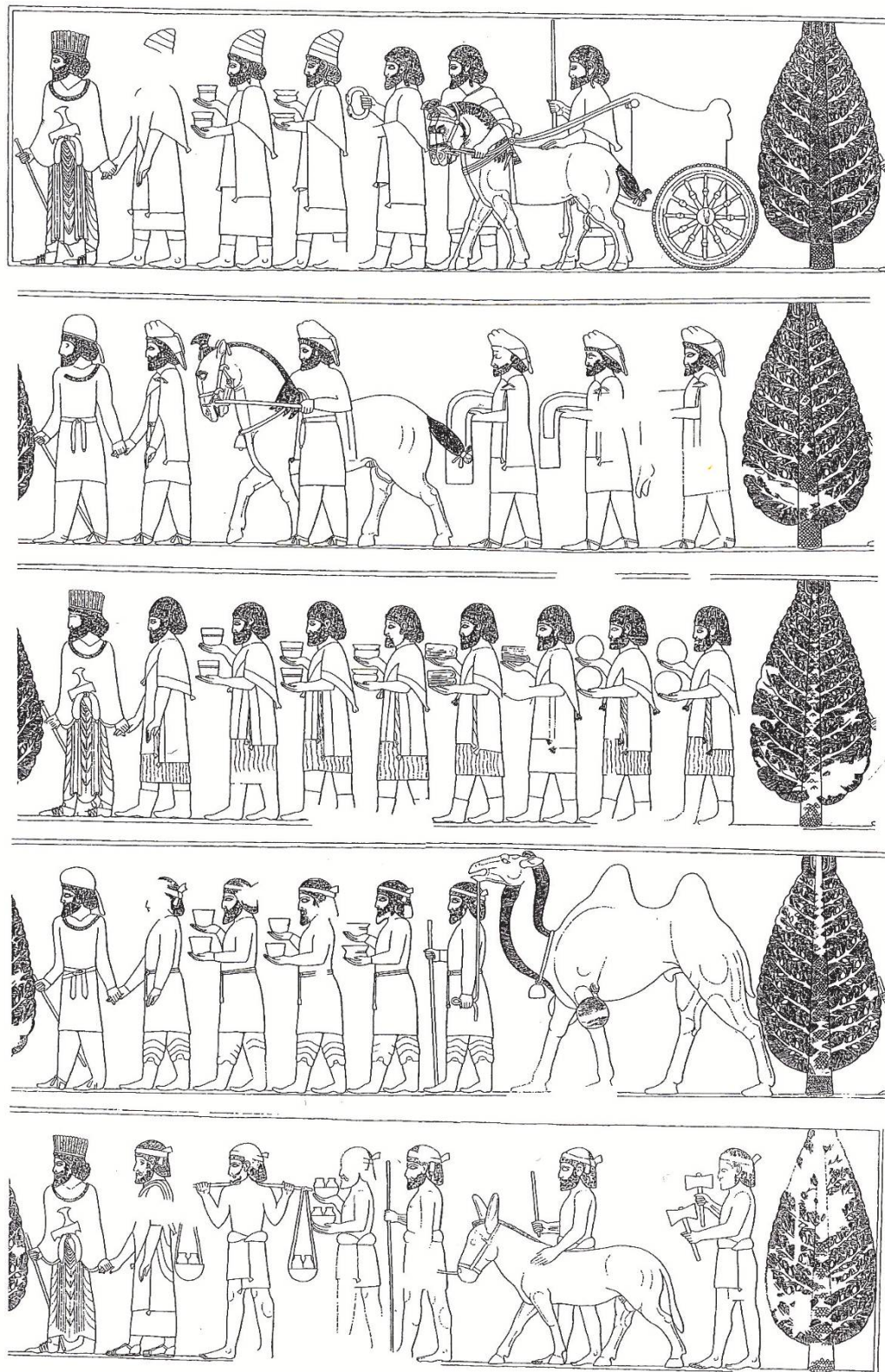


Fig. 4 Reliefs in Persepolis of delegations with tribute to the Persian king. The different panels show the delegations from Lydia, Cappadocia, Ionia, Parthia or Bactria and India. The reliefs are good illustrations of the complex character of premodern states (after Curtis & Tallis 2005:65).

fourteenth century until 1826. They constitute a specific warrior caste, created by forced recruitment of Christian boys who had a Muslim military training (Keegan 1993; Keeley 1997).

A third solution to the problem of loyal warriors was to recruit 'barbarians', that is, young men from areas outside a specific realm. Sometimes this solution meant that the warriors who superficially may have been perceived as enemies of the kingdom were integrated into the military organization of the state, such as Germans in the Roman army and Turks in the medieval Byzantine army. However, the recurrent pattern of young men in foreign service shows that the benefits of the system must have outweighed the drawbacks. It meant that warriors without social ties with other groups in the kingdom were tied directly to the ruler, and thus were loyal to the state. Moreover, these warriors probably found it easier to use violence against the local population because they lacked cultural and social barriers against such violence (Keegan 1993; Keeley 1997).

Unlike the first two solutions, the system of enlisted strangers had great cultural and political consequences both inside and outside the states. In many cases, the warriors returned to their original regions after completion of service and became innovators in their local communities. In some cases, such as that of Harald Hardrada and perhaps Ragnvald in Ed, they also became political rulers. They contributed to the incorporation and reinterpretation of foreign models in local contexts, so that a wide zone with local cultures was created around the borders of various kingdoms and empires that were indirectly influenced by the centres of power.

In other cases, the foreign troops remained and gradually became more integrated into the states. Sometimes new hybrid forms of expression were created within empires among the foreign troops, and in some cases the recruitment of 'barbarians' led to the gradual seizure of power in the empires. Examples of such 'barbarian' seizures of power are found in different parts of the world. The foreign young men were thus important for the military strength of premodern states as well as for the internal balance of political power in these states. But recruitment of the foreign warriors also had cultural implications because the recurring cultural encounters between the 'barbarians' and the empires led to new hybrid cultures, both in the centres and the peripheries (Keegan 1993; Keeley 1997; Otto et al. 2006).

Ragnvald in Ed, like the brothers in Hunnestad and the anonymous warriors in Ismantorp, were all part of this pattern that was not only European, but also global. From a local perspective, these global contexts may also have implications for how the role of warriors in prehistoric Scandinavia should be interpreted (cf. Holmquist Olausson & Olausson 2009). The question is whether different parts of Scandinavia in some contexts can also be regarded as centres, where foreign young men came for recruitment. Uncommon burial rituals for warriors as well as weapons of foreign origins indicate that armed men sometimes had a foreign origin or were set apart from ordinary society. In the pre-Roman Iron Age warriors on Gotland were already buried in specific ways. In contrast to common graves, men with weapons were placed together in pits, sometimes including as many as eight to fifteen people (Arnberg 2007). The well-known boat graves in central Sweden from the sixth to the eleventh centuries are examples of warriors that clearly distinguished themselves from the surrounding society (Fig. 5). These men, in contrast to people buried in the contemporary barrows, were not cremated, but were placed in boats with weapons, kitchen utensils and many animals (Müller-Wille 1970). These specific death rituals were confined

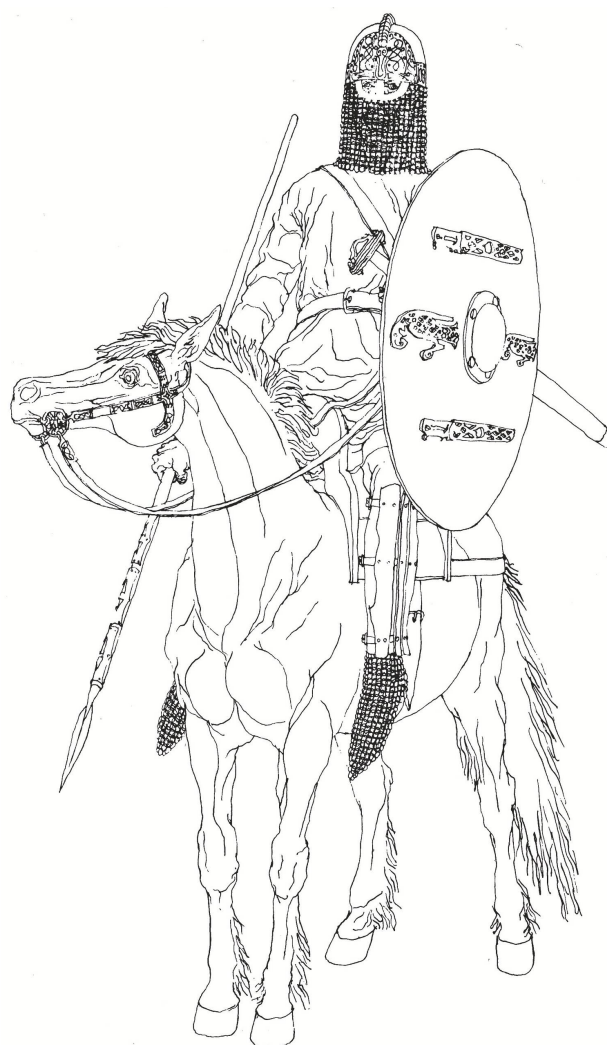


Fig. 5 Helmet from Vendel dating to the seventh century. Normally the famous boat graves in Uppland are regarded as belonging to the local elite, but perhaps they should instead be viewed as expressions of groups of foreign men who were outside the local elite (from Wikimedia Commons).

to a few places where these warriors were buried. Therefore, it is quite possible that these warriors had a specific foreign identity, distinguishing them from the local population. In the tenth century other foreign groups seem to have been present in central Sweden since there are traces of archers of steppe nomadic origin in Birka (Hedenstierna-Jonson 2006). Further examples come from Denmark in the tenth century, where foreign men seem to have been decisive for state formation (Dobat 2009).

Such a presence of foreign warriors means that the common interpretations of warrior graves in Scandinavia must be reconsidered. Often warrior graves are perceived as expressions of the local elite, but warriors could, as in many other cultures, have been partly unfree, foreign or marginalized groups. Thus, the importance of foreign young men is part of a global pattern that may reinforce new interpretations of local burial rituals.

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PROBLEMATIZING THE PAST

GENES AND AGENTS: CLOSING THE THEORETICAL GAP

John C. Barrett

Abstract: The search for a general theory of evolution that is applicable to both biological and human socio-cultural histories currently stands or falls upon the acceptance that evolutionary theory is, necessarily, Darwinian in form. This chapter questions the adherence to Darwinian mechanisms of evolution whilst accepting that the evolution of all forms of life, at its various levels of organization, operates upon the basis of a common principle. That principle is that life is sustained by its ability to read the conditions necessary for its own existence. Forms of life are differently structured catalytic systems that identify the necessary information, and import the required energy, to undertake the work of self-creation. Different forms of life cannot be reduced to a single determinate such as genetics. The role of archaeology is to establish the evolutionary histories of those living systems within which humanity has variously defined itself.

Keywords: Autopoiesis, Darwin, Evolution, Genes, Neolithic, Bronze Age

Introduction

My purpose in this contribution is to demonstrate that both biological evolution and socio-cultural evolution operate upon the same fundamental principles. This does not imply that the reproduction of socio-cultural conditions is reducible to the level of a biological determinate (contra Wilson 1998). My argument will move away from the principles that govern the 'modern synthesis' of Darwinian evolution (Huxley 1974) and I offer this contribution to Kristian for two reasons. First, it questions the operation of current theories of cultural evolution and theories of human agency that Kristian has correctly identified as following divergent paths in the development of archaeological theory (Kristiansen 2004). Second, it offers a perspective upon the changing scales at which the 'forces of history' have operated in the processes of social evolution (Kristiansen 2011).

Employing the term evolution as a descriptor for various historical processes has proven problematic (Trigger 1998). On one reading the term merely describes the emergence of one formal arrangement out of its predecessor, although this belies the challenge of identifying the mechanisms that might drive such a trajectory, and of assessing the controversy that arises when these mechanisms give rise to historical trajectories that appear to be progressive and directed. Carneiro provides an excellent review of the application of evolutionism in cultural anthropology and Yoffee has critically reviewed earlier models of social evolution with particular reference to generalized typologies of social development as they have been applied to the rise of early states (Carneiro 2003; Yoffee 2005). My concern is to question the use of the Darwinian theory of evolution and its reliance upon natural selection to explain the evolution of networks of human behaviour. By so doing (and perhaps somewhat counterintuitively), I hope to establish that a common structure exists between biological reproduction and the evolutionary forces of human agency.

The Darwinian model

The concept of evolution is inexorably linked to its application in biology, and because the adoption of Darwinian principles to the analysis of social development has long been an issue of contention (cf. Barlow & Silverberg 1980) we must begin

with some comment on the Darwinian theory of evolution. It is important to distinguish between the factual observation that all life is related through a history of evolutionary development, and the problems that come with attempts to explain how such an evolutionary process might operate. The Darwinian theory of evolution deals with the latter by proposing that two, relatively autonomous forces explain the evolution of life: the reproduction of inherited variability and natural selection (Godfrey-Smith 2009). The former supposedly generates a spectrum of variable traits (phenotypical characteristics) that are distributed across the members of a reproducing population, whilst the latter supposedly acts to secure the reproductive success of some of those variables over others. 'Population thinking', which Mayr (1976: 26-29) attributed to Darwin, therefore treats populations as comprising competing and variable individual carriers of inherited traits upon which natural selection operates. Whilst populations are made up of organisms of limited life expectancy their histories have been characterized as long-lived lineages of phenotypical variation. In stressing the centrality of genetic inheritance Dawkins drew the distinction between the transience of the individual life-span compared to the enormous longevity of successful genetic lineages (Dawkins 1976).

There is however a significant ambiguity in the way the concept of natural selection is employed in the literature (Brunnander 2007). In one usage, natural selection winnows the variable products of reproduction to secure the success of some (the better adapted). This usage implies that the reproductive process that is acted upon by natural selection is in itself blind, having no inherent direction other than to draw upon the available reproductive resources. It is therefore natural selection that, over time, is given the task of guiding the evolving trajectory of the population as a whole. In the second usage, the consequence of reproduction appears to be that the organism adapts to its environment, as if the mechanisms of reproduction had some inherent (i.e. directional) propensity to select for the adaptive optimum. The routine failure to distinguish between these two uses, and indeed to use the two interchangeably, is one target in Fodor and Piattelli-Palmarini's recent critique of the Darwinian theory of evolution (Fodor & Piattelli-Palmarini 2010).

In the Darwinian theory of evolution the phenotype therefore

describes the form and behavioural characteristics of the organism upon which natural selection supposedly operates. The lives of individual organisms contribute to an evolving population whose history tracks towards an adaptive optimum. It has become commonplace to describe the inherited resource upon which an organism's development depends (and which until relatively recently was treated as fully determining that development) as a source of information (Maynard Smith 2000), with the inherited genetic material (the genome) being ascribed the role of encoding that information (Godfrey-Smith 2000a, cf. Kay 1998). In developing this analogy Maynard Smith (2000: 179) proposed that the information being encoded by the genome was the consequence of natural selection. If we were to assume that the genome determined the design of the organism then we would have to assume that natural selection was issuing the command 'make the organism in this way because this design has worked well in the past'. If we now consider the two uses of the concept of natural selection we have already identified we are confronted by two options concerning the way a population of traits, bundled together as phenotypes, might track towards an optimum level of adaptation over the course of a reproductive cycle. In the first, natural selection is treated as an externally derived input into the process of reproduction which, by suppressing the reproductive potential of the least adaptive traits, achieves the optimum output. Thus, as Maynard Smith proposed, natural selection is the command encoded by DNA. In the second, the inherited information is treated as an internally generated mechanism that manages, in ways that are undefined, to self select for an output that is the optimum combination of traits for adaptation.

If natural selection were to act as an in-put selecting for the most adaptive phenotypic outputs of a reproducing system, then natural selection would seem to 'explain' the evolution of the phenotype within the limits of its inherited resources. Selection is therefore taken to act holistically on the phenotype such that '[A]ll that is being evaluated by evolution is the selective value, the "fitness", of individuals' (Mayr 1976: 45). However the traits that contribute to the individual's phenotype are often explained as having a functional role in solving an adaptive problem, as in an animal's camouflage solving the problem of protection against predators. This results in an 'atomistic' view of the phenotype as comprising an assemblage of traits that are expressions of particular combinations of the genetic code which has been selected for. Although this conforms to popular assumptions that there are 'genes for...' this or that characteristic, the position is not sustainable. There are two problems. First, many traits are neutral to selection and may be carried forward on the back of quite different traits that are selected for (Gould & Lewontin 1979). Second, and more importantly, genes do not function in this way and therefore neither can natural selection: 'To consider genes as independent units is meaningless from the physiological as well as the evolutionary viewpoint' (Mayr 1963: 263 & 1976: 45). One reason why the human genome project has been such a surprise (or failure, depending upon your point of view) has been that the assumed uniqueness of humanity is not represented by a similar level of uniqueness genetically (cf. Strohman 1997; Lewontin 2001: 133-195). It seems increasingly difficult to see how natural selection can operate with the necessary targeted precision on the genome if it is to fulfil the very demanding role required of it by the Darwinian theory of evolution (Ho and Saunders 1979; Fodor & Piatelli-Palmarini 2010).

The second form of adaptationist explanation we have identified implies that the mechanism of reproduction is able to direct the organism towards an optimal adaptive design. The process

by which such directed transmission of variability could occur appears unspecified but might presumably involve an internal means of generating phenotypical designs as a response to external stimuli. In other words, this would involve a form of learning that appears to veer away from Darwinian and towards a Lamarckian theory of evolution (Gould 2002: 145). As unlikely as this seems, directional transmission has been incorporated into explanations of cultural evolution as if such a move were unproblematic from a Darwinian perspective (Boyd and Richerson 1985: 81ff. Shennan 2002: 56ff.). The problem posed by this form of explanation for the direction travelled by an evolutionary lineage exposes the conflict that currently arises between narratives of biological and socio-cultural evolution. Given that socio-cultural behavioural patterns are part of the human phenotype, and given that the human phenotype is supposedly a product of natural evolution, it is difficult to see how we arrive at directed evolution from what are assumed to be Darwinian mechanisms of natural selection.

Post-Darwinian evolution

Darwin opened his case for the evolution of life's diversity with the observation that breeders of racing pigeons and dogs could select breeding pairs to ensure the preservation and development of desired traits across the generations (Darwin 1899 [1859]). He concluded that inherited variability was a general feature in the reproduction of all living things and that natural selection could fulfil a role analogous to that of the breeder. Natural selection was given the role of fixing the characteristics of a population over several reproductive cycles and of giving rise to speciation by diversifying the conditions of selection on a single population, split perhaps between environments by migration. The history of life was thus presented as gradually branching phylogenies (Darwin 1899 [1859]: diagram). Being unaware of Mendel's evidence for particulate inheritance, Darwin assumed that inheritance through sexual reproduction involved the blending of parental characteristics.

With the synthesis that was established by the 1930s between Darwinian evolution and Mendelian genetics, and following the discovery of the double helix structure of DNA in the early 1950s, the basis for treating genetics as a 'code' for the expression of different forms of life appeared to be confirmed. The evolution of life could now be regarded as the product of the chance generation of genetic mutations and genetic migration, coupled with the necessity for survival through natural selection.

The gene-centric model of evolution reached its clearest expression in the dogma of molecular biology, which defined life in terms of genetic lineages (replicators) that are transferred between the short-lived vehicles represented by the organism (interactors). Indeed one might be forgiven for thinking that this dogma promulgated the popular belief that DNA is the only material to pass between parent and offspring and this can result in the confusion, already noted, as to whether or not natural selection can be regarded as ultimately acting upon the genome. We are left to wonder as to what has happened to the developing organism through which genes find an expression of their function and upon which natural selection is supposed to work? Is it not odd that '[T]he organism as a real entity, existing in its own right, has virtually no place in contemporary biological theory' (Webster & Goodwin 1982:16)?

If a Kuhnian revolution is currently taking place in biology (Strohman 1997) then it is doing so courtesy of the organism's renewed claim to be the object of study. Given that evolution

is essentially about the ways the reproduction of organisms either maintain or transform their form and behaviour across the generations, then the symmetry between biological and social notions of evolution will turn upon the mechanism or mechanisms that enable either the maintenance or transformation of different levels of biological order, from the level of the organism through to that of the social group. Given the complexity of the issues I aim simply to indicate some of the common principles by which systems of organic order are constructed, whether that be at the level of the organism or the community, and in which cultural production finds common ground with biological production (cf. Griffiths & Gray 1994: 278-9 & 301).

The most basic form taken by an organism is the cell. This contains the chemical mechanism which, by means of the manufacture of different proteins, generates cells that have quite different functions in the construction of the multi-cellular organism. In sexual reproduction the fertilized cell (the gamete), which is itself the symbiotic combination of two cells, the sperm and the egg, divides to produce the particular cells that build the various organs in the developing foetus. What is remarkable in this process, apart from its very existence, is that each cell, whatever their functional differences (cells for heart, liver, lungs and so on), contains the same genetic material. The implication is that the developmental process directs protein development during cell division.

The important point to take from this is that an agency immanent to the organism itself is doing the work that generates the growth and sustains the functioning of the multi-cellular structure. The minimal definition of agency is that it does work and this has three implications: 1) agency requires an intake of energy, 2) it is directed by referencing itself towards some condition (it has intentionality), 3) it has a material consequence. The genetic material itself cannot do the work involved in developing an organism, for it is but an inert chemical structure comprising complementary pairs of four chemical bases that are bonded opposite one another along the double strands of nucleic acid that form the DNA helix. This chemical resource is just one component of the portfolio of conditions that the gamete inherits from the parents and the environment, and within which the foetus will develop. These conditions include the chemical, nutrient and temperature gradients that exist within and around the fertilized egg, the behavioural patterns of the parents, and the wider niche environment that will have been modified by the behaviour of previous generations. Not only does this entire environment constitute the wider context within which the work of development is undertaken but, as Oyama has argued, it questions the status of the dichotomy often taken to exist between inherited biological resources that focus in particular upon genetics, and the resources of nurture: in other words it questions the viability of maintaining the nature/nurture dichotomy (Oyama 2000a).

The problem with the biological literature at this point is its failure to accept the necessary existence of an agency to undertake the work of building the organism and to evaluate the mechanisms that direct that agency. It is the emergence of such an agency that characterizes the biological level of organization and thus lifts the processes of organic development above being considered simply the product of, and therefore reducible to, a chemical reaction. The failure to recognize the emergent role of agency as *the* characteristic of biological developmental systems has resulted in the confused claims that seek to identify the causative mechanisms responsible for protein synthesis with a mixture of genetic and wider environmental factors (cf. Godfrey-Smith 2000b). Such claims are therefore restricted to evaluating the extent to which

either genetic or environmental factors 'code for', or determine, the development of the phenotype. The only course of action to overcome choosing between the strictly determinist options presented by the nature/nurture dichotomy is to favour a broad assemblage of determinate conditions providing for a 'causal democracy' (Sterenly, Smith & Dickison 1996; Oyama 2000b).

The force of the 'coding for' analogy might imply that genetic material, either alone or in tandem with other conditions, encodes and transmits information necessary to synthesize the amino acid sequences of protein molecules where, as we have already seen, that information is suggested as deriving from, and thus determined by, natural selection. However the analogy with information cannot be taken to indicate that genetic material carries meaning for it has no semantic content. Rather, if the analogy is to have any force then it must be that this material reduces error by constraining the range of future transcriptions (Kay 1998). Meaning is only generated when an agency responds by synthesizing amino acid sequences in the reproduction of the protein molecules of cells. That agency is manifest in the work achieved by the structurally complex procedures of RNA transcription. RNA are single chains of nucleotides that contain the energy (sugar) and the potential to catalyse through the production of enzymes, the processes that are necessary to synthesize and fold amino acids into proteins. This work is done by responding sequentially to certain sections of the DNA structure and, to continue the analogy, it is the *RNA procedures* that express a reading of the DNA in their construction of proteins. Meaning, in other words, is not encoded in DNA, but is brought into being through the reading that is undertaken by the agency of RNA of certain base sequences carried on the DNA. This undoubtedly complex process means that sections of DNA are selected for the construction of particular proteins, although this process is still at some remove from the construction of the particular characteristics of the maturing phenotype. A considerable and complex level of interaction between proteins is then involved in the further development of the organism (Dupré 2005: 199). The classical concept of the gene as the determinate for a physical characteristic is now open to significant revision (Portin 2002). Indeed, if genes exist they do so in virtue of being recognized as units of significance by RNA: they exist only in the expression of being read. This process of reading requires a certain orientation or intentionality towards the genetic text and this might be partly informed by the available energy sources, environmental context and stage in the developmental sequence at which this process occurs. This opens the possibility that the development of the organism is directed towards the environmental context in which it will grow.

From here it is possible to sketch a model of developmental and evolutionary processes that forms an axis of symmetry between social and biological evolution. This model must allow both for the reproduction of systemic order over time and the generation of transformations in that order. The stability of the system may be for the long term whilst transformations may be relatively rapid describing a history of punctuated equilibria rather than the gradualism that Darwin ascribed to phylogeny. This shape is familiar to the histories traced by the social sciences and it also seems likely, although this is contested, to describe the shape of the paleontological record (Eldredge & Gould 1972; cf. Dennett 1996: 282ff.).

Kauffman and Clayton (2006) propose that biological agency emerges at a particular level of organizational complexity when a minimal set of physical conditions are in existence. The case

being made here is that biological agency emerges at the lowest level of organization that is necessary for the reproduction of organisms and that it is the emergent condition that distinguishes the reproduction of life from the processes associated with chemical reactions and to which it cannot be reduced. Biological agency therefore constructs forms of life and this, by extension, takes place at various levels of organizational complexity, from cells through to populations. Each level may be characterized by emergent forms of agency that operate according to certain common principles. Two of these principles are key to our minimal definition of agency. Agency works by intentionality which means that agency has to be orientated towards some object, such as the disposition to read sections of the genetic sequence in a certain way. To do work and thus to construct order requires the transference of energy, which means that the developmental system, such as the cell or the population, can only sustain an agency by means of a permeable boundary across which energy may be imported. Of course this describes the process of metabolism, which is a defining characteristic of life, but it also allows for energy to be differentially appropriated, stored, and distributed in a complex structure. Consequently we now replace genetic causation with the contingencies of construction, where life, if one might put it this way, is the construction of meaning, the operation (and therefore the outcome) of which is partly contingent upon the material to be read and the sources of energy that are available to be utilised. Indeed we might reiterate the point that significant changes in energy sources derived from the wider environment might either disrupt or redirect the way inherited resources are read and therefore shift the outcome of the developmental process.

The characteristic of the agency that defines the common axis between biological and social reproduction is therefore that it metabolizes the energy necessary for the work of making complex organisms with internal flows of energy and matter and which range from biological individuals to populations. It undertakes this work by orientating itself towards, and extracting meaning from, the order it finds embedded within certain resources. This accommodates the evolutionary processes discussed by Hodder elsewhere in this volume. Such systems can therefore be regarded as self-organizing. It follows that complex self-organizing systems maintain themselves in states that are far from thermodynamic equilibrium (Kauffman 1995: 9-10). As an outcome, populations develop in ways that direct themselves towards the conditions of their continuing existence, which means living towards, and coping with, the external conditions that they inhabit. Life, in other words, has a direction in its claim to future existence. Varela described this as being the means by which the organism experiences the environment as having significance and value for itself (Varela 1996).

The question of social evolution

Human societies are particular kinds of population comprising particular kinds of organisms. Maturana and Varela (1998) developed a general model for a living organism based on cellular life and which described the organism as a network of processes operating within a semi-permeable boundary. The organism grows by the self-generation of that same network and of its boundary conditions. Described as autopoiesis, the work of growth demands, as we have seen, the operation of an agency orientated towards an information source and sustained by a system of metabolism. In the terms of this general model a question arises: should the self-generation of self-organizing populations that include human societies, be considered as a form of life? These populations

obviously represent a level of organization at some considerable remove from that discussed by Maturana and Varela, and the suggestion that they be treated in this way is certainly contentious (Luisi 2003: 57). One important distinction is that autopoiesis lays emphasis upon the development of the organism rather than upon the processes of reproduction. On the other hand reproduction is obviously the focus of both neo-Darwinian and Marxist theory: Friedman, for example, has argued cogently that the unit of analysis in the case of human social evolution 'is neither society nor a particular institution, but the total process of reproduction' (Friedman 1982: 179). How might we resolve the relationship between the growth of the organism and the reproduction of a population?

The Darwinian claim that the 'fitness' of the phenotype is established by natural selection that determines the relative reproductive success of inherited variability within a population, would require us to maintain the analytical distinction between the organism's behaviour (which is part of its phenotype) and its environment which selects for it. However the selective reproduction of behaviours from one generation to the next must also have material consequences for the organism's environment. Dawkins refers to these consequences as the organism's 'extended phenotype' (Dawkins 1999) and this introduces a problem, for how are we to view material culture? Darwinian archaeologists echo Dawkins by treating material culture as an extension of the human phenotype, and thus treat the functionality of material culture as determined by its adequacy for environmental adaptation (Mesoudi *et.al.* 2004). But material culture is also a dominant component of the human environment. When humans do things they do so with reference to, and as the expression of, their practical competence in exploiting the material cultural environment in which they find themselves. The analytical framework that sets the fitness of behaviour against the forces of environmental selection is therefore compromised given that material culture is both behavioural out-put and environmental in-put.

The treatment of material culture as a manifestation of human behaviour (and thus as an adaptation to the environment), rather than being the environment within which human beings live, is part of the foundation upon which the supposed distinctiveness of humanity from the rest of the animal kingdom rests. That humans make artefacts is widely regarded as indicative of their possessing the unique cognitive propensity to design things and to represent ideas. Human evolution 'out of nature' is thus written as if it were the emergence of a hominid capable of design and of symbolic representation. As Ingold notes in a critical review of some of his earlier work, the question of the design of environmental modifications as applied to animal and human behaviour (comparing, for example, the beaver's lodge with the human's house) has come to rest upon the assumption that the beaver's lodge is designed by whatever innate mechanisms also 'design' the beaver's body, whereas humans are endowed with minds capable of designing their houses prior to the processes of construction (Ingold 2000: 175). Humans, it would seem, act on their environment whilst animals live in ecologies. But human behaviour expresses the ability to lay claim to occupy some part of the world effectively, a practical ability to cope in the living world of things. Certainly humans do, under various circumstances, objectify the conditions they confront but if they were not part of the world of experience in the first place there would be nothing to objectify. It is therefore the human ability to inhabit ecologies that enables them to objectify an environmental policy.

To treat the environment as selecting for the reproduction of certain behaviours, and therefore for the reproduction of material cultural traditions as the consequence of those behaviours, is clearly problematic (Ingold 1992 & 2000: 172ff.). So, indeed, is the distinction between the natural and cultural environment. 'An adequate ecological anthropology', writes Ingold, 'must be centrally concerned with the mutual constitution of persons and environment' and avoid the notion that environment is either an accommodation 'to the imperatives of nature, or ... an appropriation of nature within the categories of culture' (Ingold 1992: 40). In drawing upon Gibson's concept of *affordance* as being that quality which an environment can furnish for an animal or human (Gibson 1979: 36ff.), Ingold makes the important point that the affordances of objects are their 'inherent potentials' where 'different animals can live in a *shared* environment, and moreover can share their perceptions of what it affords' (Ingold 1992: 42-3 original emphasis). The culture/ nature dichotomy is thus dissolved by the recognition that the self-organization of biological populations expresses the individual organism's ability to act on a reading of their environment that includes the behaviours of near neighbours. Self-organization is the transmission across a population of a common behavioural response to the reading of an environment (Camazine *et.al.* 2003).

The development of human agency is a particular form of 'sense making' which recognizes certain affordances as offered by the environment for developing its own place in the world (Thompson 2007) and which Ingold, borrowing from Heidegger, refers to as the 'dwelling perspective' (Ingold 2000: 185). The autonomy of the agent does not mean that the agent is isolated 'but only that it can act on its own behalf' (Kauffman & Clayton 2006: 505). In this way the cultural order of the world is constantly brought into being by the work of human learning and development which maintains, elaborates, and at times transforms, the relationships between people, plants, animals and things (Latour 2005). It is by means of these networks that the performances of others become recognizably the manifestations of particular qualities of humanity (Barrett forthcoming), and by being in the world in this way the distinctively human propensity emerges to treat the order of things as if they revealed some underlying or governing logic: a revelation that is often enhanced by ritualized practices and cultural representations. Human societies no more exist to reproduce lineages of cultural resource ('selfish memes') than do organisms exist to reproduce genetic lineages. The reproduction of cultural resources, as the reading of environmental conditions over time, occurs within the context of human social reproduction because those resources are the necessary, but contingent, source of interpretable information facilitating the human agent's development (Ingold 2000: 172-188).

The analytical distinction that autopoiesis introduces between the development of individual organisms and the reproduction of a biological population can now be seen to confirm the view that evolutionary change arises from the ways organisms are able to grow themselves and that the evolutionary trajectory emerges over time by the reproduction of the population. Social evolution is thus an emergent property (Kauffman & Clayton 2006) resulting from the changes in the ways the individual members of that population were able to develop by practical reference to the behaviours of conspecifics and the semiotic values offered by the environment (Hornborg 1996). From the perspective of human societies, this gives substance to Giddens's Theory of Structuration which concerns the relationship between short-term agency and the long term trajectories of social structural development. Whilst Giddens accepts the possibility of some connection with the 'conceptual

vocabulary' of biology (Giddens 1984: 231), the Theory of Structuration has remained concerned with the relationship between abstract concepts of agency and rules and resources, rather than accepting that the development of human agency is fundamentally lived as a question of biological growth.

Social evolution from the Stone Age to the Bronze Age

Social evolution presents a challenge to a neo-Darwinian reading of history. If the behaviour of a population's members did indeed track towards an adaptive optimum under the auspices of natural selection then it becomes difficult to understand why change should accrue once a state of homeostasis has been reached between a population and its environment. The widespread assumption that agriculture represented an inherent, and therefore understandable, economic advance on hunter-gatherer economies was challenged with the publication of the 'Man the Hunter' symposium (Lee & DeVore 1968) and Sahlins's assessment of hunter-gatherers as representatives of the 'original affluent society' (Sahlins 1974 [1968]: 1-39). However it is with the rise of Bronze Age systems that the challenge to account for social evolutionary change appears particularly acute. On most accounts the European Bronze Age witnessed increased settlement densities, increased social ranking, increased levels of craft specialization, and increased dependency on long-distance exchange. All these factors therefore are manifestations of increased structural complexity, and with it a quantitatively increased level of thermodynamic disequilibrium which would have increased the risk of systemic failure. Why might social evolution result in this increased risk rather than stabilize at an adaptive optimum? One coherent attempt to answer this question has proposed that the social evolutionary trajectory was determined by an internal structural logic operating within, but not determined by, certain environmental and technological constraints (Friedman & Rowlands 1977: 203). That structural logic describes the reproduction of the entire system in which production is linked to consumption through exchange, and where the biological reproduction of the social unit plays a central role in structuring debt obligations and alliances that are ultimately linked to the supernatural domain of ancestors and gods (cf. Friedman 1982; Kristiansen & Rowlands 1998). The presumption is, therefore, that the reproduction of a human population is structured by exchange relations which, in turn, structure asymmetrical relations between participants, households and supernatural beings. Such exchange relations appear to be inherently competitive and thus drive evolutionary growth to levels of consumption that might exceed local ecological constraints.

Two linked problems attend all structuralist models: their inherent abstraction, and the resulting treatment of human agency as if it were determined by the logic of those abstractly defined structures (Thompson 1978). If 'people make history but not under conditions of their own choosing', then social evolution might be better conceived, as I have already argued, as the emergent property of populations resulting from the practices by which their members generated their own development (but not under their chosen conditions). This is fundamentally an ecological issue. All human agents require the intake of energy (food, sunlight, warmth) for their own development and the practices that have structured the organization of human populations are also the practices by which particular environments have been brought into view. The boundary condition for a populations system is mapped by the application of the technical and labour processes of energy extraction. These boundary conditions might, under certain historical conditions, be objectified as political boundaries when

the resources of nature are claimed as property, or when dominant polities are able to extract energy reserves from the product of subservient systems. The internal order of any evolving social system will also be structured by boundaries whose maintenance involves the processing, flow and the asymmetrical appropriation of energy and materials that sustain the life chances of some portions of the population above others (as is witnessed, for example, in the case of theocracies or class-divided societies, or indeed as constituted in relations of age and gender).

What Sahlins defined as the Domestic Mode of Production (Sahlins 1974: 41ff.) has never been 'underproductive' by reference to anything other than an abstract potential, whilst it was an ecology that in reality defined a mode of life developed by those who laid claim to an environment in which 'meanings ... participate in its construction' (Rappaport quoted in Hornborg 1996: 52). This perspective allows for the evolution from Stone Age to Bronze Age political economies to have emerged in virtue of the ways human agencies developed themselves by revealing the meanings they found to be present in ecologies.

The transition from hunter-gatherer to early agricultural systems arose from the redesign of the boundary conditions across which energy was imported to sustain a system of human, plant and animal metabolism. The Neolithic revolution occurred when the forager's procurement of energy directly from the plants that were gathered and animals that were killed was 'both temporally and spatially displaced by the propensity to store the energy provided by the fertility of the land in the growth and reproduction of domesticated plants and animals' (Barrett 2011: 76). The management of land, and the biologically isolated breeding of domesticates, resulted in the creation of new symbiotic communities of humans, plants and animals (cf. Rindos 1984). The labour of human agency brought into view a landscape in ways that secured the maintenance of delineated areas of fertility. These were worked as garden plots adjacent to settlement areas in central Europe (Bogaard 2004), but may have been worked across more dispersed areas in the conditions afforded by different ecologies elsewhere. Either way, the perception of landscape must necessarily have developed over this period as manifesting long-term tenurial bonds between humans and places, partly as the result of the vegetational changes that arose from the long-term and seasonally structured behavioural patterns of hunter-gatherers and animals. Indeed, we might go so far as to suggest that a transformation in discursive practices will have contributed to the way the world was seen afresh, with very different linguistic categories of landscape, tasks and temporality accompanying the development of agriculture (cf. Renfrew 1989). All these changes will have facilitated the inherited rights and obligations of working a defined portion of the landscape over the seasons, rather than negotiating access to a more generalized and seasonally dispersed landscape of resources. The practices that made the land into a resource to be managed also brought into view the human histories that such landscapes now seemed to contain, and which were made manifest in the long-lived settlement architecture and associated cemeteries in south-eastern and central Europe, and in the development of mortuary monuments in northern and western Europe.

The evolution of a population's complexity arose through the development of its member's biographies and the Bronze Age evolved from two broad biographical themes. One coped with an increase in face to face encounters and the ability to live in the more densely clustered settlement sites that emerged in many parts of Europe (Earle & Kristiansen 2010: 218ff.). The



Fig. 1 Rock carving images from Stenbacken and Fossum (After Coles 1990)

stability of these levels of occupational density depended upon the preservation of levels of individual integrity and the suppression of likely conflict, which would have been possible by adopting a more formalized discourse that mapped the relationships between increasingly clearly defined categories of people established as various combinations of age, gender, status and task. In this way the increase in population densities must have harmonised with developments in agrarian practices and craft specialization. These practices, whilst certainly facilitated by the increased reserves of labour, also created a more diverse and seasonally defined palimpsest of environmental resources which gained their reality by the labour of a well defined heterarchy of tasks. The constitution of these 'taskscape' would have been taken as the implicit demonstration of certain kinds of moral order. But it would also appear that, in some parts of Europe at least, these orders became objectified through developing systems of representation. To take a single example: the phallic representation of ploughman and accompanying plough team on the rock carving from Stenbacken, in Bohuslän, northern Sweden conflates 'maleness' with 'fertility' and the seasonal task of ploughing (cf. Goody 1976). Through the developing imagery on the rock carvings of northern and southern Europe the quality of 'maleness' also appears to have elided with the taking of life (warriors) and the maintenance of distant exchange (ships) (Fig. 1).

The second biographical theme of the period was defined by the lives of some members of the population that cut across the more local development of 'taskscape' to situate the meanings revealed in those more intimate ecologies within a cosmology whose central elements appear to have been shared from central and northern Europe to western Asia. The importance of Kristiansen and Larsson's *The Rise of Bronze Age Society* (2005) is that it establishes the case that a common discourse on the supernatural forces governing the context of life existed on such a scale. This too was an ecology of meanings: it enabled the occupancy of that ecology by those who could travel but still find their place in the discursive and ritualized practices of distant lands.

Conclusion

By setting issues of biological and social evolution alongside one another I hope to have made the case that these processes are symmetrical about the mechanisms that enable self-organizing organic systems to develop. By putting aside the Darwinian claim that natural selection directs the historical process, it becomes possible to grasp that biological systems, at various levels of organization, develop by the work of agencies that are orientated towards reading the meanings they find in a structured arrangement of, for example, genetic materials or environmental resources, and are sustained by the importation of energy across the boundary of the system. The theoretical gap that Kristiansen has identified between the traditions of Darwinian archaeology and the archaeological development of agency theory (Kristiansen 2004) and which has been more fully explored in the recently edited volume from Cochrane and Gardner (2011) is not closed by reducing one level of complexity (human society) to another (genetic reproduction), but by recognizing that life is a process of discovering the significance of the conditions that it inhabits.

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HUMAN-THING EVOLUTION: THE SELECTION AND PERSISTENCE OF TRAITS AT ÇATALHÖYÜK, TURKEY

Ian Hodder

Abstract: This paper argues that it is possible to develop a non-biological evolutionary selectionist position based on the ideas of entanglement and fittingness. Entanglement is defined as the sum of four relations of dependence: human dependence on things, things on things, things on humans, and humans on humans. It can also be defined as the dialectic of dependence and dependency. Fittingness derives from the ways in which humans and things afford each other in relation to abstractions and embodied feelings about what is appropriate. In order to illustrate and clarify the theoretical approach, the example is provided of long-term change of cultural traits at Çatalhöyük, a 9,000-year-old Neolithic village in central Turkey. The increases and decreases at the site of cooking pottery, clay balls, house size and sandy bricks are interpreted in terms of changing entanglements, fittingness and contingent interactions.

Keywords: Entanglement, evolution, fittingness, Neolithic, Çatalhöyük

Introduction

This paper argues that it is possible to develop a non-biological evolutionary selectionist position based on the ideas of entanglement and fittingness (Hodder 2012). In this paper I will show how long-term trends in the occurrence of traits at the Neolithic-Chalcolithic site of Çatalhöyük in central Turkey can be explored within this framework. With particular reference to the introduction of pottery, the approach explains cultural shifts not in terms of reproductive fitness or modes of transmission, but in terms of entanglement within a suite of practical, material and social processes. This approach allows a long-term perspective as advocated by Kristian Kristiansen even if it does so from a position different from the social evolutionary framework with which he is most closely associated.

Kristian's work has often focused on the evolution of chiefdoms, complex societies and the Bronze Age. But he has also engaged with and countered the application of biological evolutionary approaches in the discipline. He argued that the notion that replicative success of artefacts operates according to principles of natural selection is highly dubious (Kristiansen 2004a). He lamented the way in which biological evolutionary approaches have contributed to the development of divisions and incommensurable camps in archaeological theory. He emphasized the need to focus on historical accounts of societies and material culture in their specificity, employing micro- and macro-scales of analysis and interpretation. He questioned whether a phylogenetic model for cultural affiliation, splitting and descent can have any explanatory value given that the reasons for phylogeny in later prehistory are complex products of multiple social factors. To reduce all this complexity to reproductive or replicative success seemed inadequate (Kristiansen 2004b: 120). In conclusion, 'Darwinian concepts of selection, inheritance, costs and benefits, and so on can only be understood with reference to specific cultural and social contexts' (Kristiansen 2004a: 82). This paper is an attempt to both recognize the value of some form of evolutionary perspective in archaeology while at the same time accepting Kristian's rejection of reductionism. By adopting his stance concerning the importance of multiple factors, not just reproductive, that conspire in specific historical contexts to

'select for' certain traits, a non-reductive approach can be attained. It is not enough to gloss these selective processes in terms of 'replicative success' or 'modes of transmission'; rather, the ways in which humans and things are entangled themselves produce a selective web within which certain traits persist or decrease.

Homo faber

There has been a long tradition of scholars, including Gordon Childe (1951), Hannah Arendt (1958) and Henri Bergson (1912), who have focused on humans as creators and makers of tools. It is this tool-making ability that defines us. Indeed, for many evolutionary psychologists and cognitive scientists today, it was tool making that drew out and made possible our sapient character (Clark 1997). It can further be argued that human nature and society emerge from within networks of humans and things (Latour 2005).

The co-dependence of humans and things has come to be a key concept in many areas of archaeological research, although rarely in the integrated way to which Kristian has aspired. For example, archaeologists have come to take for granted that humans are dependent on things to survive economically, to interact socially and to compute cognitively. Although there are many differences between material culture studies (e.g. Miller 1987), materiality studies (e.g. Meskell 2005) and cognitive processual archaeology (e.g. Renfrew 1998), all these approaches have explored the very thorough ways in which human social and cognitive life depends on things, especially on those things made by humans. Archaeologists have also built up information about how things depend on each other. We know that sets of equipment are needed to complete tasks and that things are deployed in sequence – the *chaînes opératoires* of French technology studies (e.g. Lemonnier 1993) or the behavioural chains and interactions studied by Schiffer (1987). So things depend on chains and networks of other things, but they also depend on humans to be procured, produced, maintained, serviced and discarded. The costs and benefits of looking after and managing animals as things have been most effectively studied in Human Behavioral Ecology (Bird & O'Connell 2006), and within Behavioural Archaeology there has been experimental work that explores the labor and energy

flows involved in making and maintaining artifacts (Schiffer 1987). Humans depend on things, things depend on other things, and these complexes of things depend on humans. Humans too depend on other humans in their management of things. Thus we can say that humans and things are thoroughly entangled (Hodder 2012). So entanglement is the sum of four relations of dependence: human dependence on things, things on things, things on humans, and humans on humans.

In terms of this necessary entanglement, humans appear very 'thingly'. This statement has implications for the form of evolutionary theory used by archaeologists. It has seemed appropriate to adopt theories from evolutionary biology in so far as humans are seen as biological entities. The human biological organism and its genes evolve like other organic beings. But if humans are both biological and 'thingly', does this not change the picture? After all, non-biological things do not evolve in the same way as biological entities. Rather, they are transformed chemically or physically; they decay and rebuild. Archaeologists know that carbon 14 decays, but the 6 protons and 6 neutrons of carbon 12 are, for most intents and purposes, stable. Atoms are combined and recombined in numerous cycles. The rock cycle involves changes from magma to igneous rock to sedimentary rock to metamorphic rock. The life cycle of mountains involves build up, erosion and weathering, redeposition and uplift. The water cycle involves steam from volcanoes joining water in the atmosphere that falls as precipitation that flows as river and groundwater into the sea where the water evaporates and condenses. A star has a life cycle starting from a nebula and transforming into a red giant and a red dwarf and a white dwarf. While one may talk loosely of the evolution of the landscape, or of the universe, it is not the case that the process involves the survival of the fittest rock or mountain, or the fittest water molecule or the fittest carbon atom. Geology is a historical science that charts the transformation of matter.

Material things and dead organic things transform in non-Darwinian ways. Things as we encounter and perceive them are stages in the transformation of matter and energy; they are always in the process of combining, re-combining, transformation and decay. It follows then that if humans are 'thingly' they too must get caught in the processes and vitalities of matter. Matter is involved in its own set of interactions, not just ecological but also physical, chemical, radioactive etc. Humans are set within a material world that is always changing according to its own rules and historical contingencies. From the human point of view, things are unruly, unpredictably leading to unexpected contingent events. The unacknowledged conditions and unintended consequences of human action play a large part in human endeavours. The co-dependence of humans and things draws humans into the lives of things and into their transformations. It is not just that things create a material niche in which humans evolve. It is also that this niche transforms too according to its own non-Darwinian processes. The niche is unstable, drawing and entrapping humans into particular forms of action and response (for niche theory see Kendal et al. 2011).

Is it possible, then, to develop an evolutionary theory that takes the 'thingly' nature of *Homo faber* into account? There is certainly a need within a discipline devoted to the study of the greatest expanses of human cultural practice to debate various forms of evolutionary theory. Evolutionary theory in archaeology allows study of the long term, and it also allows the exploration of theories that are less human centred than those approaches that have dominated the social and humanistic sciences over recent decades. Kristiansen (2004a) argued that accounts of agency

in archaeology needed to be tempered with approaches that incorporated larger-scale processes. While, in my view, it would be going too far to disavow the importance of human agency in evolutionary change, there is also a value in exploring evolution from the point of view of things themselves (Dunnell 1980; Shennan 2008: 78). Darwinian theory provides a potential source of ideas about variation, adaptation, selection and persistence that might be applied to the study of change within human-thing entanglements.

Entanglement, fittingness and evolution

A key strut of evolutionary theory, along with variation and inheritance (transmission), is differential fitness leading to selection. Fitness is often defined in terms of reproductive success and this notion has often been translated in the cultural realm as replicative success (Boyd & Richerson 1985; Shennan 2008). I have argued above that human-thing entanglement creates a tight skein of dependencies between humans and things. Taut entanglements may themselves be seen as the selective environments within which traits are selected and reproduced. The evolution of traits within these entanglements depends on technologies, economies and institutions. Reproductive success may be a product of and may to some extent be involved in the evolution of entanglements, but the primary factors leading to selection of traits emerge from the tautness of the specific entanglements themselves. It is thus possible to countenance a non-reductive evolutionary theory embedded in the specifics of particular historical contexts, as argued by Kristiansen.

We can, then, move from differential fitness to differential fittingness. The latter is a broader term that derives from the notion that things are 'fitting' in relation to each other and in relation to abstractions and embodied feelings about what is appropriate. I have described fittingness as having three components (Hodder 2012): affordance, abstraction and resonance. By affordance (see also Gibson 1986; Knappett 2005) I mean how the parts in an entanglement allow other parts to function in relation to some end. Affordances and functions are always tied to abstractions (ideas, thoughts, words) and they resonate within embodied practices. New traits are selected for if they are 'fitting' within these three realms.

It may be helpful to provide an example. Figure 1 is a 'tanglegram' outlining the entanglement in which clay was situated at Çatalhöyük. The relationships identified in the diagram refer to the earlier part of the sequence at the site. The diagram is not simply a network; rather it is a diagram concerning dependence. Each arrow stands for 'depends on' using two possible definitions. Some dependence or dependences (plural) are one way. These are often enabling or productive relationships. Thus midden depends on clay (clay or marl was spread over middens, maybe to clean them up or level them) but clay does not depend on midden; mortar depends on midden (midden is the main constituent of much mortar at the site) but midden does not depend on mortar; painting depends on the house (in which it is located) but not vice versa (since houses exist and stand at the site without paintings); the use of pigment depends on the landscape from which ochres and minerals were obtained but the landscape does not depend on pigments; burial depends on personal artifacts (as grave items) but personal artifacts do not depend on burial (since they were not made especially for burial).

A two-way dependence or co-dependence is indicated by a two-way arrow. These relationships may be mutual dependences but

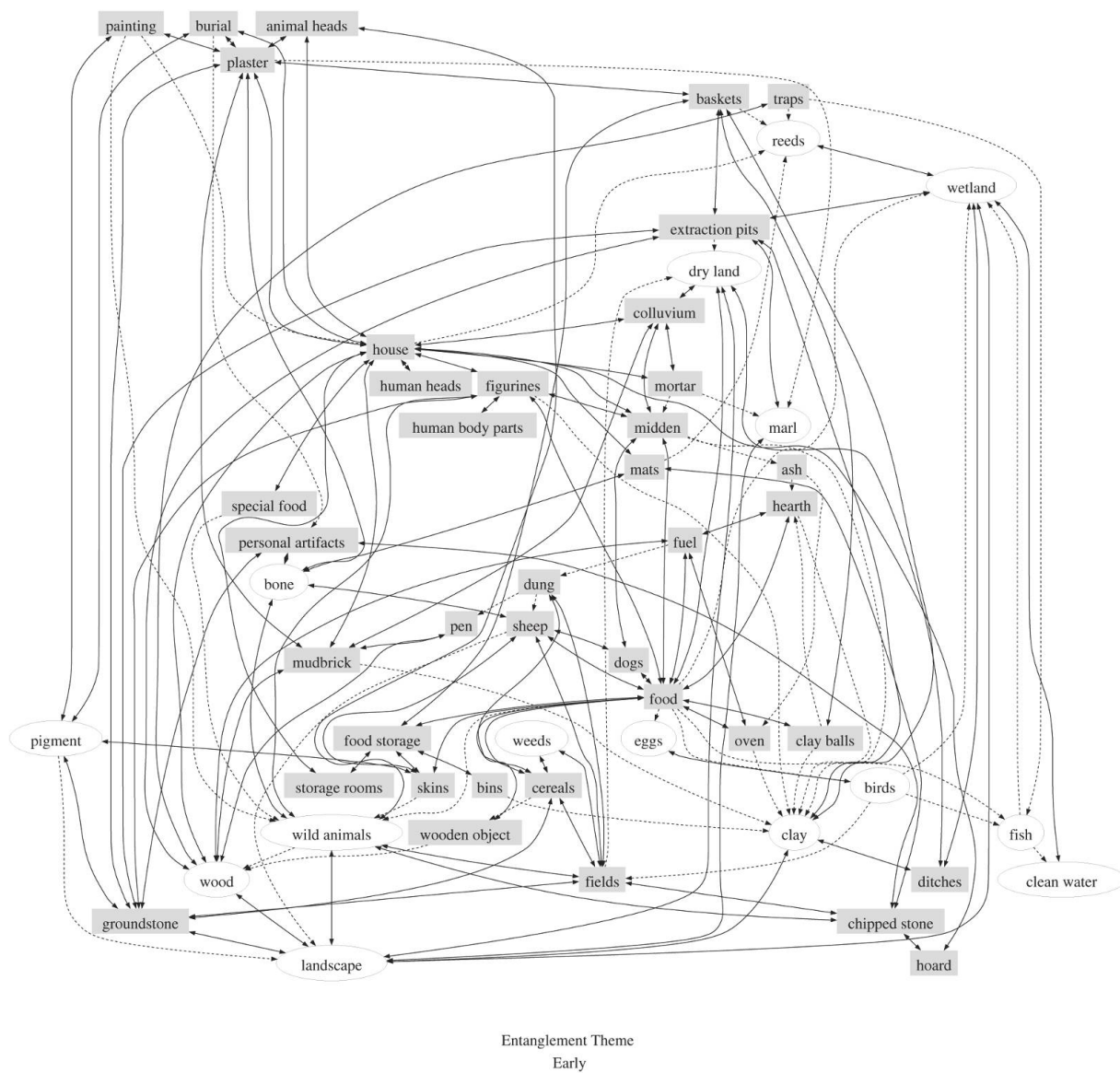


Fig. 1 Clay entanglements in the first part of the sequence of occupation at Çatalhöyük.

they may often involve dependency or dependencies (plural) in the sense of constraint or restriction. Dependency here refers to the way in which (as in psychological or World System discourse) the development of one entity is held back by another. Thus middens depend on dogs (to keep them clean from vermin) and dogs depend on midden (as space to live in since they were not allowed in houses) but dogs also add to the problem of middens by defecating on them; houses depend on midden (to be clean of refuse) and also middens depend on houses (for the refuse that constitutes them) but middens add to the problem of houses because they build up around houses causing erosion of walls and creating dirt beside houses; groundstone depends on landscape (as source) and landscape depends on groundstone (groundstone axes that cut down trees etc) but cutting down trees and obtaining rock change the landscape so that both trees and appropriate rock may be less available; cooking food depends on clay balls (before cooking pots were introduced) and clay balls depend on cooking (otherwise they would have no function) but the type of cooked food that is possible is constrained by the use of clay balls; house building needs wood and trees and it might be thought that trees

and wood do not need houses but the persistence of trees in the landscape depends on how intensively this resource is exploited for buildings. In all these relationships there is both reliance and constraint. Indeed, entanglement can be defined as the dialectic of dependence and dependency.

The entanglement shown in Figure 1 includes affordances, abstractions and resonances. For example, middens and dogs afforded each other, and both dogs and middens were involved in abstractions to the effect that 'refuse and dogs are not allowed in houses', the floors of which were kept scrupulously clean. Fresh human excretion was also deposited in outside midden and it seems reasonable to argue that there were embodied resonances between dirt, dogs and excretion.

It is possible then to argue that the selection and persistence of any particular trait within the entanglements of Çatalhöyük depended on the particular and changing sets of dependences and dependencies within them. I want, as examples, to take three temporal trends through the sequence of Çatalhöyük in

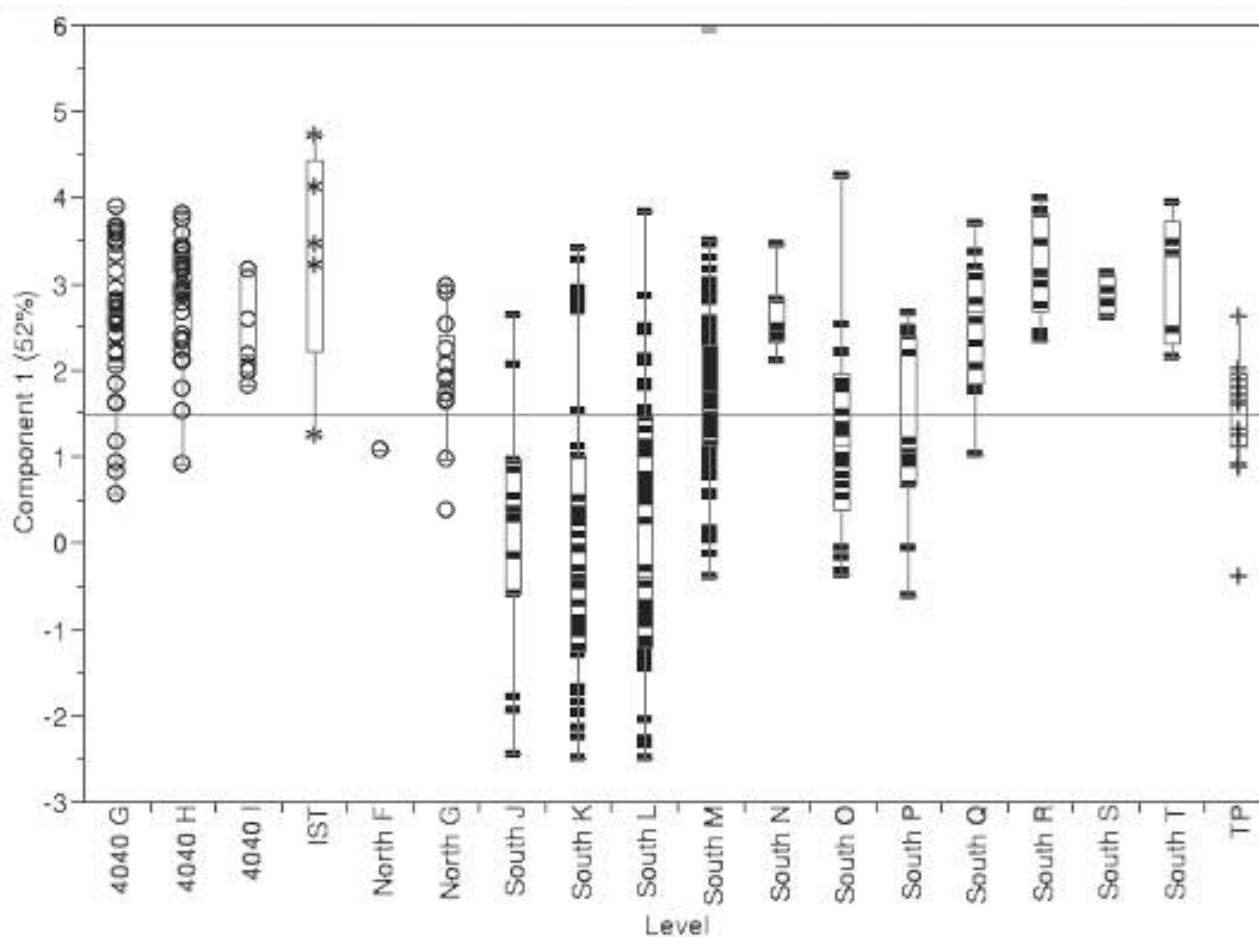


Fig. 2 Temporal changes in mudbrick composition from all areas (n= 358).

order to demonstrate the ways in which the fittingness of traits changes through time. The three trends are the gradual change in brick composition, the gradual increase in pottery and the gradual increase in house size. Discussion of these three trends will draw us into consideration of a wider range of human-thing transformations.

In terms of brick composition, Love (2013) used principle components analysis of four variables: sand-sized particles, organic and carbonate content and magnetic susceptibility in order to examine changes through time (Fig. 2). For the purposes of this discussion, it is the longer South sequence that is of interest. In the South levels a gradual change can be seen from dark-colored, organic-rich clays to sandy silt materials. Why did this change occur? Why were sandier bricks selected for over time?

In Figure 3 some of the decision-making regarding choice of brick composition is outlined as well as some of the contingent events that resulted, increasing the entanglements. Starting on the left in the diagram, we have excavated the quarry pits near the site from which alluvial clay was obtained to make the mudbricks used in the earliest levels at the site. The clays were smectitic and thus were particularly prone to expansion and contraction in wet and dry conditions. As a result the walls of buildings were very unstable and we have much evidence that they frequently buckled, bent and collapsed (Hodder 2006). Humans were thus entangled in a dependency on mudbrick. They had to endlessly manage the swelling and cracking of the clay walls. A number of

solutions were found, including doubling walls, building houses immediately adjacent to each other so that the rain could not penetrate to the walls, and building wooden frames within the houses to provide support (Hodder 2007). Another solution was to gradually use sandier bricks that held together more effectively in the stresses and strains of expansions and contractions. Doherty (2013), as a result of extensive coring of the landscape, suggests that the sandier bricks partly came from colluvial material that built up around the mound, but also by digging through the alluvial clays and marls around the site to reach deeper sandier material.

An unintended consequence of the digging of deeper quarry pits around the mound may have been the expansion of the reed *Phragmites australis*. Ryan (2013) has identified a major increase in the densities of phragmites in phytolith assemblages from Level South P onwards, following on from the initial use of sandy bricks and in parallel with a continued increase in the sandy inclusions in bricks in the upper levels of the site (Fig. 2). One explanation for this marked increase in phragmites reeds is that the quarrying (and other factors to be discussed below) disturbed the local wetlands around the site and encouraged this invasive and aggressive species. The increase in phragmites would have led to a drop in the water level and a decrease in local biodiversity – a biodiversity which the inhabitants of Çatalhöyük had utilized for a variety of resources from eggs and fish to water birds (Hodder 2005). This decrease in biodiversity and the spread of phragmites had to be managed and responded to. So humans had become entangled in things and processes that demanded greater labour and input.

It would have been difficult to 'go back' and try and get out of the entanglement. Humans depended on the quarry pits to get the material to build houses, so they just had to deal with the implications. Besides, they had a dependence relationship with the phragmites reeds as well as a dependency relationship. The needed the reeds for roofing and matting, even if they had then to manage and cut back the reeds as they proliferated and decreased biodiversity.

In the earliest levels at the site we have much evidence that, prior to the introduction of cooking pottery, cooking was achieved with the aid of clay balls that were fired and kept by the oven. They would then be heated and either be placed in baskets containing liquid in order to heat and boil the liquid, or food would be placed directly on them (Atalay 2005). As cooking pottery increased in density at Catalhöyük, so the density of clay balls decreased (Fig.

Figure 6 shows that the size of houses gradually increased through time. There is a general process throughout Anatolia and the Middle East for houses to increase in size and internal complexity from the tenth to the seventh millennium BC (Flannery 1972; Byrd 1994). At Çatalhöyük specifically, burial, rituals, storage and a wide range of productive tasks took place inside the house (including cooking, plant and bone processing, obsidian production, bead manufacture). Through time houses seem to become more independent and productive, even taking over adjacent midden areas as yards where activities could take place (Hodder 2007). As the numbers of activities in houses increased there would have been a premium on tools that allowed multi-tasking. In such a context cooking pots would have been selected for in the place of clay balls. So the increase in cooking pottery was entangled with house size; the two variables were selected for in relation to each other within the entanglements surrounding clay and cooking. It may be the case too, that the shift to sandier sources of bricks was linked in some way to the contemporary shift to sand tempered cooking pottery.

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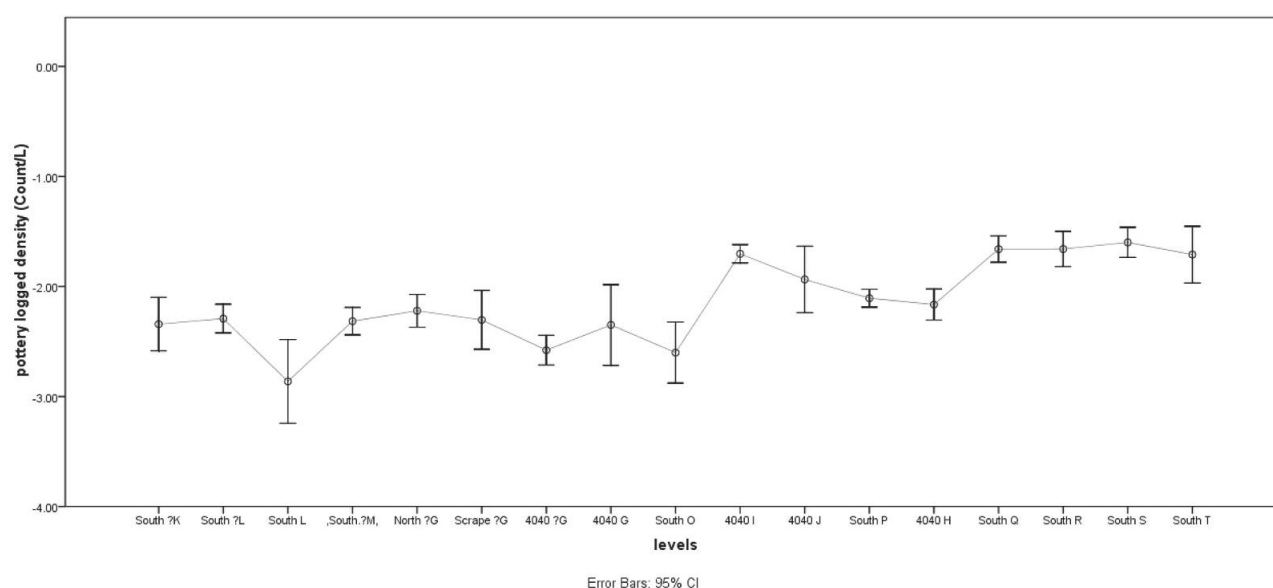


Fig. 4 The increasing density of pottery through time at Çatalhöyük (in South and other parts of the site).

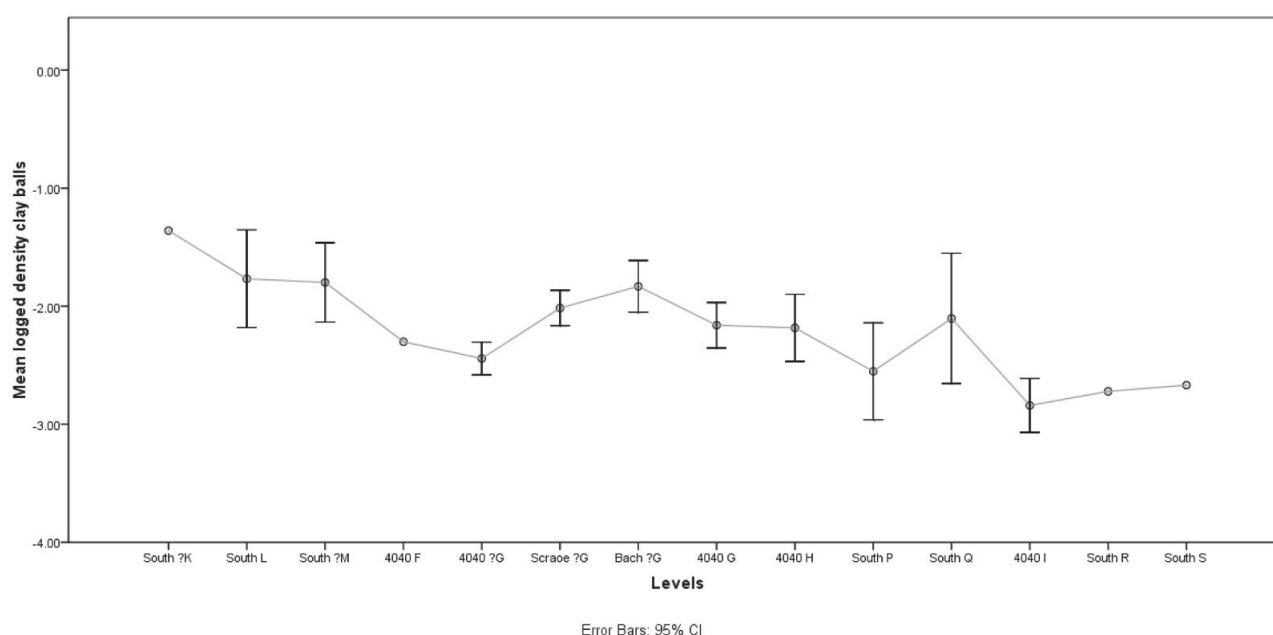


Fig. 5 The decreasing density of large clay balls through time at Çatalhöyük (in South and other parts of the site).

domestic sheep are numerically an important resource throughout the sequence at Çatalhöyük, the density of sheep bones increases dramatically around Level South P. Sheep were dependent on pottery for the processing of their meat, fat and grease, and the prevalence of pottery was itself partly dependent on its use for sheep product processing. But these dependence relations also led, perhaps unwittingly, to dependencies. The increase in sheep herding would have required that some parts of the flocks were kept near the site at least for part of the year. Close to the site they would have caused disturbance as they grazed or fed on fodder, encouraging the spread of phragmites. So, again, humans would

have had to work harder to manage both the increased sheep flocks and their effects near the site. And they were also trapped into the process of digging or expanding their quarry pits in order to obtain clays and sands to make pottery.

We can see in these examples the gradual entrapment of humans and things in the web of entanglement. Another example is provided by cattle, or more specifically wild bulls. In Figure 1, wild animals are shown linked to many parts of the tanglegram, including the house in which animal heads and horns were placed as bucrania on walls and pedestals. The paintings recovered

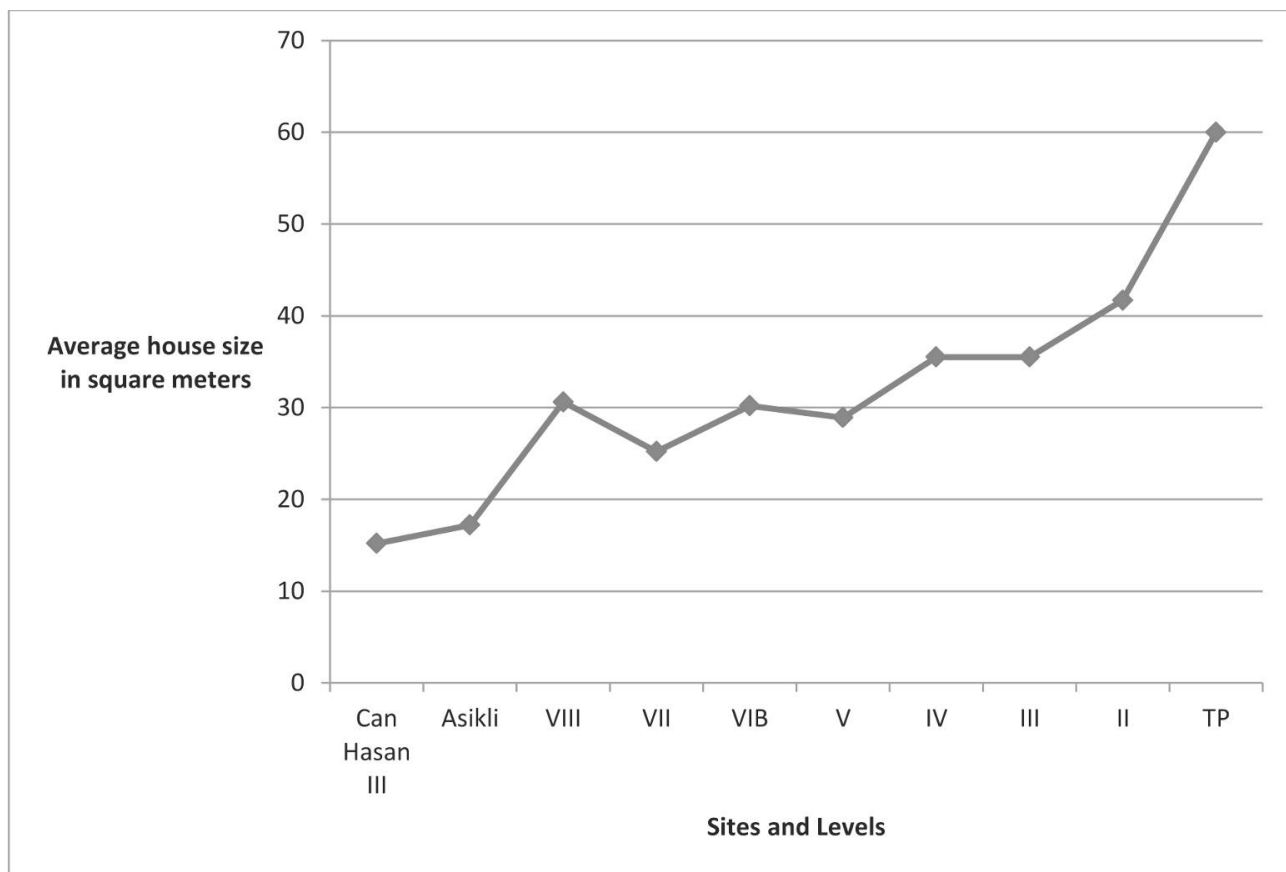


Fig. 6 The average size of houses in levels at Çatalhöyük (Levels VIII to II – using the Mellaart data, and TP) and at other sites in central Anatolia.

from upper levels at the site show collective rituals in which wild animals were teased and baited (Hodder 2006). We have on-site evidence that wild animals were involved in feasting. In particular wild bulls were preferentially used in feasting (Russell & Martin 2005) in contrast to sheep that were more common in daily consumption. So it is clear that wild animals, and especially cattle and in particular bulls, were important in terms of meat intake; but they also played a central role in social feasting and in ritual within houses. We have evidence that installations were sometimes retrieved from earlier houses, and we have evidence that stacks of wild bull horns were accumulated in certain houses or were arrayed along benches. It seems likely that the bucrania and horns acted as markers that memorialized social events and feasts. Humans thus depended on wild cattle for calories, for creating community structure, and for establishing ritual and history.

This ritual, social and symbolic system reached its apogee in Levels South M-O, after which it declined. There are fewer installations in houses in the upper levels of the site. Levels South M-O are also the phases in which population reached its maximum at Çatalhöyük (perhaps up to 8,000 inhabitants), and the analysis of human remains indicates this is both the period of highest fertility and the period of greatest stress and strain on the human body (Hillson & Larsen 2013). As population increased, so the human dependence on wild bulls for calories, community and history also increased, and we see the increased prevalence of bull horns and installations in houses.

Humans were thus caught within a particular heavy dependence

on wild bulls. The bulls afforded meat, but also the opportunity for social gatherings and the creation of history. They were also involved in abstractions – for example, both human heads and bull heads were plastered and were kept and handed down across generations. The refreshing of bull heads using plaster may also have resonated with other examples of re-plastering as, for example, in the frequent renewal of wall plasters. So bulls were fitting within a rich set of affordances, abstractions and resonances. These entanglements between humans and bulls seem to have been foundational, so much so that they inhibited the adoption of competing traits. As Arbuckle (2013) has shown, domestic cattle were adopted earlier to the east, south and west of Çatalhöyük. Central Anatolia stubbornly resisted adoption in the early seventh millennium BC. This trait was not adopted because it was not fitting within the social, economic and ritual systems that depended on wild bulls.

But as we have seen, stresses and strains were emerging at Çatalhöyük in South M-O. The entanglements around wild bulls required large labour inputs (as seen in the paintings and in the sizes of some collections of bones amassed in feasting). This was an expensive way to maintain communities and histories. In South P we see the adoption, at last, of domestic cattle. As a result there were many changes in the upper levels of the site, including a decrease in installations in houses, more use of cattle in daily consumption and more use of sheep in feasts. Cattle were little used for milk production (Pitter et al. 2013), but the increased processing of cattle meat for daily consumption would have contributed to the increased size of houses, and the control of

large amounts of meat on the hoof would have allowed houses to be more independent (as indeed we do see, as argued above).

Some cattle through part of the year would have been kept near the site, adding to the disturbances that encouraged the spread of phragmites. The adoption of domestic cattle occurred at the same time as the major increase in the density of sheep bones on the site, in the period around South P. it is possible that the increased investment in herding sheep meant there was less labour available for the collective rituals surrounding wild bulls. The greater investment in sheep herding may have facilitated the start of cattle herding (see Fig. 3).

We can trace the threads of the entanglements at Çatalhöyük. Some of the linkages I have made are more secure than others, but all are based on evidence such as temporal coincidence (the contemporaneity of the switch to sand-tempered bricks and pottery or the coincidence of the increase in sheep herding and the adoption of cattle herding). Other links are made because we know that pots were used for processing sheep or because we know of the ecology of phragmites. Behavioural archaeology has provided evidence for the greater efficiency of grit tempered pottery in cooking in comparison to organic tempered pottery (Skibo et al. 1989). Experimental and ethnoarchaeological research has shown the effectiveness and limitations of cooking with clay balls (Atalay 2005) in comparison to pottery. On the whole, archaeologists are adept at following human-thing and thing-thing interactions and dependencies.

Using these established archaeological techniques it is possible to explore the ways in which human-thing entanglements transform over time. Humans often seem drawn along by the vicissitudes of unruly things. Walls expand, shrink and collapse, thus setting off a train of interactions that are channeled within the tight skein of entanglements. An aggressive type of reed expands when disturbed. It becomes difficult to maintain wild bull feasting as labour is drawn into more intensive herding. In all these ways we see that contingent events set off chain reactions within entanglements. But the reactions that catch on and are adopted depend on the specific sets of dependences and dependencies. Domestic cattle were initially not adopted given the heavy human dependence on wild cattle for meat, community and history. In many aspects wild bulls created the fabric of social existence at Çatalhöyük; the adoption of more easily available domestic cattle would have undermined that fabric. But cooking pottery was adopted in the context of increasing labour and time demands within the house and in the context of digging deeper to obtain sandier clay for bricks. Sandier bricks were adopted to help hold up the increasingly large and independent houses, themselves increasingly large and independent partly because of labour- and time-saving devices such as cooking pottery, and later because of the greater independence of houses afforded by domestic cattle.

Reproductive success has not played a role in this account of the transmission of traits. The evidence at present intimates that the Çatalhöyük houses may not have been machines for the reproduction of genes. Using tooth morphology as a proxy measure for genetic distance, Marin Pilloud (Pilloud & Larsen 2011) has demonstrated that individuals buried beneath the floors of houses were not more closely related to each other than individuals in the population as a whole. Since production and perhaps sheep and cattle ownership were house-based at Çatalhöyük, it is difficult to argue that sandier bricks or cooking pottery or larger houses were selected for in relation to reproductive success. The assignment of individuals to productive units at Çatalhöyük may have been very

complex and fluid. It is difficult to see how one could explore the notion of a link between the adoption of traits and reproductive success. The same is true of attempts to explain the increasing frequencies of cooking pots, sandy bricks and large houses in terms of cultural transmission and replicative success. Even if it was possible in some way to establish the modes of transmission used in the replication of these traits through time, these processes of transmission are in my view swamped by the dominance of the entanglements within which they would have taken form. In the end it is neither reproductive success nor mode of transmission that produce the sequences of cultural change through time. Rather it is the overall fittingness within entanglements, the entrapping of humans and things in their dependences and dependencies, that determines the selection of traits. Some entanglements do promote reproductive success, and we have seen that the social system focused on wild bulls was associated with increased population and increased fertility. But there were also accompanying stresses and strains that led to shifts in the entanglements and the selection of new traits (such as domestic cattle). In the end it is the entanglement itself in its interaction with contingent events in biological and material worlds that leads evolution in specific directions.

Conclusion

One important aspect of evolutionary theories is variation. I have argued here that things are always going wrong, running out, dying out, being unruly along the strings of entanglements. It may seem inadequate to try and develop a theory of long-term change that is based on 'things going wrong', but this is a core component of Darwinian explanations of evolutionary change where spontaneous gene mutations create variability. Things do not go wrong randomly for the most part. Things have their own temporalities so the timing of when they cause problems or back-ups or bottle-necks may seem random to humans. Things have their own relationships and interactions so that how things go wrong is structured to some degree. Humans also produce their own immediate variability as they engage with others and with things within the entanglements. So contingent variation is an important part of human-thing evolution.

But we run into greater problems when approaching a second aspect of evolutionary theory: inheritance and transmission. While humans do of course learn from those around them, they are also prone to tinker and transform. They often seem tradition-bound, and yet they just as easily invent traditions. Whether they do or do not copy and repeat what is around them depends. And so we are taken immediately into all the dependences and dependencies within human-thing and thing-thing relationships. Humans work within a corpus of things around them that they refer to, but the factors affecting whether they copy or not include whether they can afford to copy and whether the copies are consistent both abstractly and in terms of bodily resonance. The tautness of the entanglements, the degree of entrapment, influence what is inherited and transmitted. People can rarely afford to copy prestigious people (context bias) or stick to the imitation of a successful role model (indirect bias) or copy more effective solutions (results bias). Whether they can try out their own solutions (guided variation) depends.

Similar concerns surround the third aspect of evolutionary theory: differential fitness. In evolutionary theory this fitness usually means reproductive success within specific environments, measured in terms of survival of offspring down several generations, efficiency of resource acquisition, or success in

replication as successful people are copied. While all these factors must be relevant, to greater or lesser extents in different contexts, they are themselves embedded in entanglements of humans and things that are complex and entrapping. Rather than focus on fitness, I have suggested that the more inclusive term of fittingness be used. This incorporates affordances, abstractions and resonances that are woven together and influence whether a trait is likely to survive or not. A trait may be fitting and survive in such an entanglement regardless of whether it enhances reproduction, efficiently acquires resources or is used by successful people. Fittingness itself is an adequate framework within which traits are or are not selected, prosper, persevere and die out. Fittingness is a heterogeneous matrix: it does not require a reductive moment. It allows a non-reductive evolutionary theory.

In describing the transformation of human-thing entanglements through time it has become clear that some sort of engagement with Darwin-inspired approaches is useful as they deal with the long term and de-centre from humans to the things that get selected for. But two of the struts of these theories, selection and transmission, seem more acceptable if reworked within a theory of human-thing entanglement. These shifts in focus lead, in a way that I hope Kristian would approve, to a non-reductive theory of change that explores innovation and the selection of traits in relation to the tautness of heterogeneous entanglements rather than in relation solely to reproductive success, resource acquisition and the transmission of information from successful individuals.

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BEAKER PERIOD EUROPE - FIGHTING, FEUDING OR THE ENEMY WITHIN?

Nick Thorpe

Abstract: As a development of Kristian's analyses of Bronze Age warfare in Europe, this article extends the discussion back into the Chalcolithic or Late Neolithic. Three regions of Beaker period Europe are considered: East Central Europe, Britain and the western Mediterranean, with evidence of weaponry, burials, age and gender of 'warriors', sculpture and fortifications all assessed. Similarities and differences between the three regions are both examined, to see to what extent common patterns of conflict can be identified and whether these fall best into categories of fighting, feuding or the identification of internal enemies.

Keywords: Beaker period, Chalcolithic, warfare, warrior identity, burial practices

Much of the discussion relating to prehistoric warfare has been concerned with the debate over its reality. This, however, should be regarded as settled, allowing us to move on to consider the more fruitful question of the nature and intensity of violence, conflict and warfare in different regions of Europe at particular periods in the past.

We are concerned in this paper with Beakers – and the Chalcolithic (or Late Neolithic in British terms). Famously, Beakers are a pan-European development, very similar across the large area where they are found both in terms of the Beakers themselves, and in their associated package of standardized items: burial goods with single inhumations in graves under mounds of earth or stone, often believed to be a clear acknowledgement of the individual (see e.g. Vander Linden 2004). Concerning the associated goods, mostly found in graves, it has generally been acknowledged that these seem to refer to a warrior identity of some kind (Fokkens et al. 2008; Lemerrier 2011; Pilar Prieto, this volume), thus leading on to the developments of the Bronze Age (Kristiansen 1999), although strangely glossed over by Peter-Röcher (2007). (The alternative views that these might instead reference hunting [e.g. Case 2004] or animal sacrifice [Skak-Nielsen 2009] remain very much minority opinions). These items include the tanged copper dagger or knife (Zimmermann 2007), or flint dagger, the battle axe, barbed-and-tanged flint arrowheads, and the stone wristguard – interpreted as archery equipment. In terms of warfare these could be seen as somewhat contradictory, in the sense that daggers, knives and battle axes are all clearly close-range weapons, while archery allows fighting at a distance, even out of sight.

These items can also be seen in artistic form in the southern Beaker area. Many statue-stelae are anthropomorphic, some taking the form of a human figure set into the ground from the waist down (Robb 2008). Images of weapons in the form of daggers and halberds are generally interpreted as referring to a masculine sphere of activity (see Horn, this volume). Perhaps we see here a representation of the individual (Gallay 2004), a counterpart to the now widespread practice of individual burial (Lemerrier 2011). As Anthony Harding puts it (2007: 51): 'What surely seems to be represented is an individual person bearing arms, who can plausibly be called the warrior, in what one might call a triumphalist pose, and since the number of known examples is relatively restricted it suggests that very specific individuals are being depicted.'

This is also often said to be the period in which the horse spreads across western Europe, and of course archery can be from horseback – the furthest western Beaker site has been said to be Newgrange in Ireland, which does have horses which were definitely ridden, but radiocarbon dating suggests that these were actually of Iron Age date (Bendrey & Thorpe, in press).

Early interpretations of the Beaker package were that it was the material equipment of a Beaker folk, a separate ethnic group. Early anthropological analyses suggested that males found with Beakers were taller and more robust than Neolithic populations, while skulls were larger and rounder (brachycephalic) (e.g. Abercromby 1902). Brodie (1994) re-examined the available cranial material and argued that there is a change in skull shape between the Neolithic and the Bronze Age. However, the Neolithic material is almost entirely a millennium before the appearance of Beakers in Britain, while the later sample includes much post-Beaker material from the Bronze Age.

Thus in Britain the traditional view was of an invading group of Beaker warriors arriving from the continent. Dorset archaeologist Charles Warne saw the Beaker invaders of Britain as wielding 'the gory battle-axe, reeking and fresh from deadly strife' (Warne 1866: 63); while for Lord Abercromby the Beaker Folk 'presented an appearance of great ferocity and brutality' (Abercromby 1912: 64), and indeed their faces betrayed to his keen eye clear criminal features by comparing them with recent European immigrants to London. The invasionist hypothesis has largely been abandoned today, but the impression nevertheless remains of the Late Neolithic as a period of conflict, due to the warfare symbolism of the artefact repertoire and general models (e.g. Otterbein 2004) which propose that once we have agricultural societies warfare is on a continual upward trend.

In this piece I wish to consider three areas of Beaker Europe and the evidence they provide for warfare and warriors – East Central Europe, the western Mediterranean and Britain.

East Central Europe

Eastern Europe lacks fortifications, although these were present before the Corded Ware period (Neustupný 1995), but it certainly has many examples of Beaker burials and large numbers of weapons, some of which at least show signs of use (e.g. Sosna

2012 on flint arrowheads). From burial practice it has been possible to distil the characteristics of the male warrior, e.g. along the Danube (Heyd 2007). From this we have the notion of the warrior as the active young man (Westermann 2007), whose sacrifice is symbolized in death, in line with modern sentiment and early medieval practice.

But this warrior identity appears to be far more a matter of gendered identity than one of simple sexual division of labour. This can be seen in three different ways.

First, there are females with weaponry including daggers, wristguards and arrowheads in Germany, Austria and the Czech Republic (Beneš 2002; Turek 2005; 2010; Zimmermann 2007, 76). Thus in Bavaria in southern Germany two of the eighteen graves with copper daggers where the skeleton has been examined were those of women, including one elderly individual (Kim 2005: Appendix 1). In Bohemia and Moravia six of 33 burials with daggers are believed to be those of women (i.e. are burials facing right and to the west and with the head to the south, nearly all such burials being demonstrated to be those of women where anthropological analyses have been conducted), although the daggers do seem to be of smaller size (Müller 2001). There are also right-facing burials with wristguards (5 of 46) and arrowheads (1 of 42) (Müller 2001; see also Sosna 2009). One particular example of a dagger burial from Moravia, at Záhlinice, is of an elderly woman (Dvořák et al. 1992), also found with part of a wristguard and a boar's-tusk. At Tišice (in central Bohemia) a younger woman was placed in a wooden burial chamber accompanied by two stone wristguards, an amber bead, a copper awl and dagger, and six pots including four decorated bell beakers. The grave was placed somewhat away from other burials (Turek 2005). As Heyd puts it, 'these graves demonstrate that the high rank of the well equipped archers in Bell Beaker society was shared by women who were also buried with valuable status goods' (Heyd 2001: 398). Alternatively, Turek and Černý (2001) suggest that a dagger buried with a woman was a symbolic gift from her father or husband; however, this does not explain why this particular item should be chosen. In general, it is also the case that these items have been used before their deposition as grave goods (Heyd 2007). Overall, the pattern of distinction by sex in terms of burial practice is less strict than it was in the Corded Ware (Vandkilde 2006); there is also less of a difference between the build of male and female skeletons, which has been interpreted as showing less of a sexual division of labour more generally (Turek & Černý 2001).

Second, there are children buried in both Germany and the Czech Republic with weaponry, including wristguards, bow-shaped pendants and arrowheads and copper daggers (Kim 2005: Appendix 1; Turek & Černý 2001). In some cases these children are found with several of these items, e.g. the 5-7 year old from Landau-Südost in southern Germany with a wristguard, two arrowheads, and two bow-shaped pendants (Heyd 2007); the child was in a 2 m long grave, which Heyd (2007: 352) suggests may indicate that he or she was also accompanied by a bow, which they would not have been able to draw. A particularly significant example of child burial is the cremation deposit from Tvoříhráz in Moravia. Here a large grave contained several deposits of human bone (all five being children, aged 2-10) and many Beakers, a copper dagger, a wristguard, two boar's tusks and a bone ring (Bálek & Matějčková 1999; Heyd 2007: 352-353). Of the associated items, wristguards seem to be the most common (Heyd 2007).

Finally, there are elderly males buried with weaponry. These have received less attention due to the well-known difficulties of establishing the age of older individuals through skeletal analysis, but some examples are known. For example, at the Pavlov I cemetery in Moravia a man aged 40-50 was found with a copper dagger and a bone pendant (Dvořák et al. 1996: 30-31, 55). Also, at Samborzec in the upper Vistula area of Little Poland, the 'warrior' who was buried in an unusual position (legs spread) with a copper spearhead, wristguard, model bow, triangular arrowhead and pottery was over 50 years old (Kamieńska & Kulczycka-Leciejewiczowa 1970; Makarowicz 2003).

It is also worth remembering that copper daggers, for example, are really rather rare as grave goods. Thus Heyd (2007: 348) notes that only 3% of southern German Beaker burials are found with daggers, and that there is almost always only a single dagger grave in a cemetery.

We may conclude from this evidence that there is evidence of localized conflict, but not much sign of organized warfare. 'Warrior' identity is clearly important, but was not that commonly expressed and was by no means limited to young men.

The western Mediterranean

Turning now to southern France and Spain and Portugal, the most obvious contrast with the Eastern Beaker region is the presence of potentially fortified sites. In southern France these are defensively located on hilltops or cliff edges (Lemerrier 2012). However, their fairly modest size and their relatively thin walls have led to suggestions that the structures are primarily built to display status rather than as a defence (as noted by Vander Linden 2006), despite the presence of human skeletal material in the ditches, as at Le Mourral (Vaquer 1998). It also seems to be the case that some at least of these sites had gone out of use by the Beaker period.

Against this, there are a number of cases of traumatic injury, mostly from arrowheads, which are probably of Beaker date, from both barrows and caves (Guilaine & Zammit 2005; Beyneix 2012). However, Guilaine and Zammit (2005: 131) conclude that 'Evidence [of violence from skeletons] from the South of France peaks around the mid-Copper Age; there are fewer cases of injury dating from the later stages of this era, a period characterized by the spread of the Beaker culture.' The usual Beaker items of weaponry appear here.

By contrast, some of the defended sites of Portugal and Spain (probably the origin of Beakers – Case 2004) are far more substantial, although they are only a small minority of sites (Barcelo 1999). They emerge round about 2800 BC in the pre-Beaker Copper Age and have been dubbed macro-villages (e.g. Díaz-del-Río 2004a), with multiple lines of fortifications and associated megalithic tombs with collective burials. Aranda Jimenez and Sánchez Romero (2005: 184) note that a series of architectural elements emerge at this time which can all be connected to a need for defence: sites in naturally defensible locations; enclosing stone walls; bastions and towers; forts in strategic locations with a wide field of view; strong gateways; and complex ditch systems.

The largest and most complex of these is Los Millares, enclosing around 5 hectares, with several parallel lines of heavily defended forts, at least thirteen forts in total, and strong gateways, with a population estimated to be around 1,000 people (Arribas & Molina 1984; Aranda Jimenez & Sánchez Romero 2005). Radiocarbon

dating suggests that the forts represent an expansion of the defended area (Cámara & Molina 2006). Here the walls reach a thickness of up to nine metres, while the larger forts have double defensive lines with deep outer ditches and internal towers. Estimates of the labour time collected by Monks (1997) are around 100,000 worker days; although Aranda Jimenez and Sánchez Romero suggest lower figures would be appropriate, a minimum of 50,000 seems reasonable. Even the smaller sites such as Zambujal (Kunst 2006), of which there are perhaps eighty, enclosing around 1 hectare, are regarded as being in highly defensible situations on isolated hilltops or promontories, and again contain substantial and fort-like structures with solid walls up to 4 m thick with projecting bastions (Kunst 2000). In a number of cases it does seem to be the case, as Aranda Jimenez and Sánchez Romero have argued (2005: 187), that there is an element of excess to these defences. Some were clearly more substantial than necessary to fulfil a purely defensive role, leading to suggestions that this was an architecture of prestige, and that these are therefore enclosures with a ritual and ceremonial purpose (e.g. Jorge 2002). This matches well with the low-lying location of some of the enclosures (Díaz-del-Río 2004b). However, as Díaz-del-Río (2006) notes, the ritualization of enclosures does not mean that they cannot also be defensive. As in the case of some Earlier Neolithic causewayed enclosures in Europe (Thorpe 2006), it may be that the ritual significance of the place enclosed made it a place of great power.

This is not incompatible with the interpretation that substantial walls were constructed in order to demonstrate the labour force available to them. It can of course be argued that visible evidence of the ability to call on a large labour force may have acted as a partial deterrent to other groups pondering an attack or raid. It is not exactly clear who the rival groups may have been in some cases. For example, the nearest major enclosure to Los Millares is Las Pilas, but this is over 60 km away (Díaz-del-Río 2011). Where there are plausible defences, we may wonder whether these are primarily related to exercising a degree of control and domination over local populations. It is also important to remember that the large sites are exceptional, and typical stone-walled enclosures are far smaller and less monumental. Chapman (2003: 169) suggests that these might be best envisaged as fortified farmsteads.

It is clear that there has been an unfortunate tendency to pigeonhole all enclosures within a 'defensive' category, despite the range in size, in topographic location, in contents and activities, in architectural features and in site history. Nevertheless, a recognition that a variety of purposes may lie behind the creation of enclosures does not mean that a significant number were not at least in part constructed with defence in mind. Indeed, Jorge (2003) accepts that a variety of purposes did exist for the enclosures, although tending to play down defensive ones.

Very large numbers of arrowheads were manufactured in Portugal especially, possibly by specialists (Ramos 1998, cited by Chapman 2008: 203), and the Iberian forts appear highly suitable for defence by a force of archers with what look like regularly spaced loopholes for firing outwards (Cordes et al. 1990). Some of the enclosures contain hundreds of arrowheads, described as possible military arsenals by Cardoso (2000: 44). It has also been suggested that technological developments in the form of the heating of flint cores allowed for the manufacture of thinner arrowheads, more likely to shatter on impact (Aranda Jimenez & Sánchez Romero 2005).

At Los Millares broken arrowheads have been found up against the defensive walls, suggesting that the site came under attack

(Aranda Jimenez & Sánchez Romero 2005: 188 – based on comments by the excavator, Fernando Molina). At Zambujal, almost a thousand arrowheads have been found (Uerpmann & Uerpmann 2003: ch. 4), with concentrations interpreted either as stockpiles for defenders or as the arrows shot in to the site by attackers. Chapman (2008: 204) notes that there is evidence of burning and possible destruction at a number of sites, including Los Millares.

These sites have often been termed central places (e.g. Gilman 2001), but this may be too organized a term. They are, however, clearly centres of production, including copper at Zambujal and Los Millares, and arrowheads at a number of sites including Fort 1 at Los Millares (Ramos 1998), where cores and blanks of imported flint were found together with retouching tools and facilities for heat treatment of the flint. Some graves contain large numbers of arrowheads, such as Los Millares Burial 40, with 85 arrowheads along with ten copper and twenty ivory artefacts and painted pottery (Aranda Jimenez & Sánchez Romero 2005: 191). The interpretation of this as one of the highest-status burials in the cemetery again suggests the importance of the archer in the Beaker world-view.

As well as the stone-walled enclosures, there are also a number of ditched enclosures at sites such as Valencina de la Concepción (Costa Caramé et al. 2010), a massive site (300-400 hectares) with significant evidence for copper production in a 9 hectare quarter (Nocete et al. 2008). As is the case with the stone-walled enclosures, the majority of sites are considerably smaller, e.g. in central Spain (Díaz-del-Río 2003). There are also hybrid sites (Hurtado 2010), such as La Pijotilla (Hurtado 2003), with a ditch enclosing an area of some 90 hectares, along with an inner stone wall, within which were large numbers of storage pits, suggesting a significant food surplus. The largest is Marroquíes Bajos (Castro et al. 2010), with five concentric lines of ditches up to 22 m wide enclosing 113 hectares, the fourth ditch line being surrounded by a mud-brick and stone wall with external bastions.

Although burials with weaponry are more common than elsewhere in the Beaker area (Lemerrier 2011: 125), there are relatively few instances of fatal traumatic injuries from collective or individual burials associated with Beaker pottery, perhaps a dozen altogether (Faria & Gomes 2008), while the long period of use of some tombs makes dating rather difficult. The sexed examples were mostly males, e.g. at the chambered tomb of Longar in the Basque area (Etxeberria et al. 2006). One exception is the multiple burial of six individuals (adult males, females and adolescents) with fatal arrowhead injuries in a pit at Cerro de la Cabeza (*Fabián García and Blanco González 2012*). This general lack of evidence is a contrast with the earlier part of the Chalcolithic, with sites such as San Juan ante Portam Latinum (Vegas ed. 2007). Where surveyed, the picture is also similar for non-fatal injuries, for example in southern Spain (Jiménez-Brobeil et al. 2009) and Portugal (Silva et al. 2012).

These macro-villages are generally interpreted as emerging as a consequence of political factionalism. However, it appears that at a number of sites in Portugal and southern Spain, such as Leceia in Portugal (Cardoso 2000), the constructional phase of the site was over before the Beaker period, during which elements of the walls were allowed to fall into disrepair. At Los Millares outer lines of walling appear not to be maintained in the Beaker period, although the forts were constructed now (Díaz-del-Río 2011). This has sometimes been argued to indicate a more general pattern of abandonment and lack of new construction (e.g.

Márquez & Jiménez 2010), but against this, it is worth noting that excavations have shown that in a number of other cases, such as Cerro de Capellania, pre-existing settlements gain substantial enclosing walls in the Beaker period (Chapman 2008: 239). It is also important to remember that these co-exist with many open settlements – although this may be interpreted as a relationship of dominance of enclosed over open settlements, there is no supporting evidence as yet in economic differences between the classes of site. There is thus no single overarching scheme of architectural development. One other major difference is between sites such as Valencina de la Concepción in south-west Spain, with evidence for large-scale centralized copper production, and sites in south-east and central Spain with only domestic-scale production (Chapman 2008: 242).

Given the nature of the Spanish environment, and the concentration of defended sites in the south-west, it is not surprising that attempts to provide a general explanation for the appearance of large scale defensive architecture have focused on the harshness of the environment (Gilman & Thornes 1985), although there is as yet no convincing direct link. The interconnectedness of the defensive sites is indicated by their disappearance together at the end of the Chalcolithic, at which time many were destroyed by fire and not reoccupied (Lillios 1993).

The situation in the Mediterranean is certainly a more convincing case of actual warfare, although it may well be the case that much of this was at a very local level rather than representing conflicts between rival centres of power.

Britain

The use of weaponry in burials is also well known from Britain, exemplified by recently published discoveries at Boscombe Down (Fitzpatrick 2011). Here the ‘Boscombe Bowmen’ (four males and three young children) were found with Beakers, four barbed-and-tanged flint arrowheads and a boar’s tusk. The ‘Amesbury Archer’ (an adult male of 35-45) was accompanied by Beakers, three copper knives, two wristguards, fourteen barbed-and-tanged and one triangular flint arrowheads. This individual had a non-fusion of the scapula, which could be the result of archery practice, but he was an implausible warrior, as he had a chronic infection of the joint in his left knee.

The male associations of weaponry suggested here are confirmed by a wider survey (Brodie 2001). However, where evidence is available, many of these males seem to be somewhat elderly (examples in Henshall 1968; Brown et al. 2007; Gardiner et al. 2007), bearing out the example of the Amesbury Archer.

But what is the actual evidence for warfare as a social factor in Beaker period Britain? In contrast to the Early Neolithic of Britain, only a handful of plausibly defensible Late Neolithic enclosures are as yet known. One is at Mount Pleasant in Wessex where around 2200 BC a substantial timber palisade some 800 m long was constructed to cut off an area of 11 acres. The palisade was partially destroyed by fire and partially dismantled. Wainwright (1979: ch. 4 and 237-245), the excavator, felt that the palisade was defensive, but the only contemporary activities inside the enclosure are a stone setting and some ditch deposits, neither of which looks like domestic activity. The low-lying location of the enclosures also makes this an unlikely location for a defended settlement.

In Scotland, at Meldon Bridge there was a rather earlier palisade

enclosure built around 3000 BC. The palisade here cuts off a large area between two rivers and is again an impressive construction. This was at first believed to be a defended settlement (Burgess 1976), but it is now clear that the settlement debris found inside the enclosure is not contemporary with the palisade and the site is now interpreted as primarily ceremonial in function (Speak & Burgess 1999).

Unfortunately for the old theories of blood-soaked Beaker Folk referred to above, the examination of copper and early bronze daggers has revealed no traces of violent conflict (Wall 1987). Many battle-axes are elaborate objects, sometimes decorated, and frequently have blunted edges. This need not, of course, mean that battle-axes were never used as weapons, but no skeletal evidence exists in the form of wounds. Seen against this background of nineteenth-century exaggeration it is not surprising that some archaeologists have concluded that the Beaker period was relatively peaceful, e.g. Mercer (2006: 148) concludes that the period saw ‘a total absence of formal warfare as we currently understand it’.

What we do see in the Late Neolithic are individuals who suffered traumatic injuries, or appear to have died violent deaths. There are several of the former, with injuries to the arms and the head (see Thorpe 2006 and Heath 2009 for examples). In terms of violent deaths there are relatively few of these, and by no means do all of them fit the paradigm of the young male of ‘fighting age’.

At the Oxford University Parks Science Area a round barrow ditch enclosed four inhumation burials in graves (Boston et al. 2003). The earliest of these burials (radiocarbon dated to c. 2200 BC) was a woman aged over fifty, who had suffered a severe blow to the back of the head from an axe, which had begun to heal before death. Although an unlikely warrior, this woman was buried with respect – being the primary burial and the only one accompanied by a Beaker.

At Feizor Nick Cave, Yorkshire, a woman aged 18-25 was buried in the cave after being shot by an arrow in the back; she may also have been struck over the head (Smith et al. 2007).

At Stonehenge (Evans 1984) the burial of a young man was found in the ditch, accompanied by a wristguard and three barbed and tanged arrowheads; the tip of one of these was embedded in a rib, while another arrowhead tip was found in the sternum, probably having passed through the heart, and a further rib has a groove cut in it which was also interpreted as the result of an arrow injury. All the arrows seem to have been fired from close range. Does this represent a ritual killing (as proposed by Gibson 1994), the execution of a criminal, or alternatively a victim of conflict? Certainly the notion of an execution seems highly implausible given the setting – someone who had broken key social rules is unlikely to have been seen as a suitable person to bury in such prestigious surroundings.

In Oxfordshire there is the burial at Barrow Hills (Barclay & Halpin 1999). Here a young adult male was found with a variety of artefacts including a group of five finely made barbed and tanged arrowheads. When the skeleton was lifted another arrowhead was discovered lying against the spine – this much cruder example has an impact fracture at the tip and was probably the cause of death.

There are a number of other less well established possible deaths through arrowhead injury (see Thorpe 2006 for details), where

either the dating is unclear (as barbed and tanged arrowheads continue to be manufactured into the Earlier Bronze Age) or the available records are insufficiently clear to establish a connection between skeleton and arrowhead. Are some or all of these victims of violence ‘the enemy within’? They could be social outcasts or scapegoats, perhaps thought to be guilty of supernatural acts.

In some ways one of the most significant results of the clear demonstration in various parts of Europe of Earlier Neolithic warfare (Schulting & Fibiger eds. 2012) is the confidence to be able to argue that we can recognize its absence too. That appears to be the case in Beaker period Britain.

While warfare may well not be an appropriate term to use for the period in Britain, what we may see here are the remains of those killed in the course of small scale conflicts, whose bravery was then recognized by a prestigious burial.

Finally, we may consider the breaking up of all the statues at Le Petit Chasseur, Sion, in Switzerland (Gallay 2004; Harrison & Heyd 2007; Corboud 2009) and several at Aosta in Italy (Harrison & Heyd 2007) and their reuse in burial chambers – do we see social conflict here too? Harrison and Heyd (2007: 151) convincingly argue that the striking off of the heads of the statue-stela while leaving the body largely untouched represents a kind of iconoclasm occurring before their reuse. Before reuse the stelae fragments were apparently left lying on the ground making a powerful statement about the powerlessness of their creators. They conclude (Harrison & Heyd 2007: 172) that at Sion ‘the destruction of each stela was equivalent to the breaking of a known person’s identity and prestige; a means by which their successors showed their rejection of the claims made’.

While the Beaker grave-goods of daggers, battle-axes and archery equipment symbolized conflict, the lack of clear evidence for warfare, particularly given the substantial number of surviving skeletons from the period, makes it more likely that raiding not warfare was typical of much of Beaker period Europe, including East Central Europe and Britain. This would perhaps result in relatively low levels of casualties, but might have been a vital source of status acquisition. This raises the question of how long any ‘warrior aristocracy’ of the kind sometimes proposed for the Chalcolithic/Late Neolithic could have sustained itself without engaging in war. Some of the victims of violence may also not have been casualties of organized conflict, but rather those deemed to be ‘the enemy within’. The overall situation does, however, seem to be rather different in the Iberian peninsula and Mediterranean France, where there is persuasive evidence for more than small-scale conflict. Even here, some of the victims of violence may be scapegoats, who are often most keenly sought at times of conflict. For the roots of this different social context, we will need to look further back, into the pre-Beaker Chalcolithic, but it is clear that although the Beaker network shared many developments, including common weaponry, the pre-existing circumstances in each area are vital in understanding the different trajectories taken in terms of the role of violence in the Beaker period.

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ITALY IN LATE BRONZE AGE EUROPE: FROM MARGIN TO COUNTERPOINT

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Abstract: While Italy's place in contemporary Europe is unquestioned, the same is not true in studies of the Late Bronze Age, where Italy's position is marginal at best. Kristiansen's vision of the European Bronze Age rejects narrow regionalisms in favour of a polyvalent yet closely interconnected world of similar religion, social and political structures, and technologies. His Bronze Age world is one of peoples, in particular warriors and smiths, on the move, in contrast to the sedentism of earlier farmers. Italy, where evidence of interaction with temperate Europe is limited until the Final Bronze Age, and where the relative dearth of weapons makes a well-developed warrior aristocracy unlikely, fits only partially into this compelling treatment. This article resituates Italy within its European context, not as a marginal or watered-down zone but as a counterpoint whose discrepant cultural features can enrich our understanding of Late Bronze Age Europe as a whole.

Keywords: Italy, Late Bronze Age, Mediterranean, cultural contact

Introduction

It is with great pleasure that I write this chapter in honour of Kristian Kristiansen, with whom I have spent happy times in Salemi, Sicily and whose work I draw on frequently in my research. I hope this piece will be of interest to him.

This paper attempts to draw attention to the problem of Italy's place in Bronze Age studies.¹ In contemporary archaeological scholarship, focusing on a single region runs counter to a new wave of multi-regional studies which emphasize broad commonalities grounded in interactions and mobility between regions as a motor for change (e.g. Kristiansen & Larsson 2005 for Europe; Feldman 2006 for the eastern Mediterranean). The Mediterranean is the latest of these zones to be the subject of broad area studies (Horden & Purcell 2000; Blake & Knapp 2005), although scholars have questioned the utility of these macroscale approaches (e.g. Harris 2005). One of the dangers of macroregional studies is the facility with which portions of the territory that are either under-studied or do not fit the general model can be ignored, and the boundaries redrawn to suit the scholarly arguments. Italy is a frequent victim of this. Beyond its national boundaries, Italy receives short shrift in anglophone studies of the Bronze Age of Europe and the Mediterranean. Symptomatic of this neglect is the absence of standardized English terms to describe Italy's location in this period: is Italy in the central Mediterranean (Vagnetti 1999; Tykot 2004) or the western Mediterranean (Marazzi 2003; Cunliffe 2001: 272-5)? Or is it part of Europe (Bietti Sestieri 1997)? This terminological variability is symptomatic of Italy's marginal role in Bronze Age studies.

To be fair, there are good reasons for Italy's marginalization. In practical terms, the rich body of Italian scholarship on later prehistoric Italy is rarely translated and is often inaccessible to overseas scholars due to limited printings of the relevant

publications. This does not make things easy for the non-specialist attempting to dip into the Italian data. Further, Bronze Age Italy does not fit easily into the broader narratives of the Mediterranean or Europe. Italy does not exhibit the social forms of the eastern Mediterranean Bronze Age palace societies, yet it differs from temperate Europe in significant ways, such as climate and ideology. This paper will examine first the treatment of Italy in both European and Mediterranean Bronze Age area studies, and then discuss ways to reinsert Italy into Bronze Age studies.

Italy in the Mediterranean

Recent works of scholarship have focused on reconstituting the Mediterranean as a single region of study, with the growing realization that the peoples of the islands and littoral have always been linked and have shared certain ways of life (Horden & Purcell 2000; Blake & Knapp 2005). These linkages are evident as one traces the circulation of goods from the Neolithic on, the spread of crops and technologies, and the movements of peoples. These last phenomena are particularly complex, including the closely studied colonization of the Mediterranean by the Greeks and Phoenicians (Aubet 1987; Tsatskheladze & De Angelis 2004). These attempts to write the Mediterranean into a common zone of interactions are welcome and exciting. Yet there are undeniable differences between the eastern and western halves of the Mediterranean in the Bronze Age: differences in material culture, social structure and lifestyle that are not easily glossed over. Fernand Braudel attributed the differences between the two halves of the Mediterranean to geography, with the large swath of open sea south of Italy, the Ionian Sea, separating east and west and restricting travel. To Braudel, each basin was a distinct historical zone, internally unified and coherent (Braudel 1972: 135-7). While in the decades since Braudel's statement, newly demonstrated links between the two coasts of the Adriatic in all periods have blurred Braudel's overly sharp East-West boundary line, the broad differences he identified remain evident (Lenzi 2003).

While the trend may be to think holistically about the Mediterranean, Braudel's distinction is tacitly still in effect, with the neglect of the West in European and Mediterranean

¹ The Italian Bronze Age is divided into Early, Middle, Recent and Final, each with internal numbered subdivisions. The Recent Bronze Age, of particular interest here, is also known as the Subapennine period, and dates conventionally to 1350-1200 BCE. The Final Bronze Age, also known as the Protovillanovan period, dates to 1200-1020 BCE according to dendrochronological data (Bernabò Brea, Cardarelli & Cremaschi 1997a: 28). In Anglo-American scholarship the Recent and Final Bronze Ages are conventionally called together the Late Bronze Age.

Bronze Age studies. Books whose titles include the term 'Mediterranean' on closer inspection focus exclusively on the eastern half only, that is, the Aegean, the Near East and Egypt (e.g. Bevan 2007; Kiriati & Knappett forthcoming). In scholarly terms, this makes perfect sense: the trends evident in the East are absent in Italy, and the historical trajectories are completely different. While in the East, state level societies were already well established by the second millennium BCE (Redman 1978), in Italy the populations were organized into tribal societies or chiefdoms (Peroni 1989). Moreover, there are certain themes in studies of the eastern Mediterranean that provide shorthand for scholars to communicate effectively between zones. These shared themes may have been facilitated by an archaeological record that obliged scholars to interact with each other: Bronze Age sites in the eastern Mediterranean reveal the residues of interactions in the past, the presence of foreign objects at sites and the cross pollination of everything from design elements to crafts technologies to notions of kingship. Thus the material record itself demands a multiregional approach in eastern Mediterranean studies. A recent example is Feldman's (2006) study of the shared elements in the 'International Style' of the Bronze Age in the eastern Mediterranean. Feldman situates a recurring set of design elements, including predation scenes, smiting figures, grazing herbivores, within the context of kingship and courtly life in the region. In the absence of state level political structures in Italy, it is no wonder that there are next to no examples of objects with this kingly iconography in Italian contexts. The diplomatic correspondence that bound the eastern rulers together (Feldman 2006: 145-56) is similarly absent from Italy and the rest of the western Mediterranean. Indeed the international style is visible in small portable luxury items that moved as tribute and diplomatic gifts between rulers, and we can see in the eastern goods reaching Italy quite the opposite: mainly lower value items that in material and style held little prestige in the East, such as ceramics or small glass beads (see Vianello 2005 for a comprehensive overview of the Aegean and eastern Mediterranean products in the West). These cannot have arrived with diplomatic missions of the kind recorded in the East, and without the evidence for kingship or statecraft in the West, the exchanges are not comparable. Therefore the economic activities in Italy do not constitute a less intensive version of those in the East, but are something different altogether. While in the East, too, lower value goods circulated in networks that may have been quite independent of the higher level diplomatic missions, the two types of exchange networks were part and parcel of the same 'system' that linked the Aegean to Cyprus, the Near East and Egypt (Sherratt & Sherratt 1991). The same cannot be said of the West.

If Italy is mentioned at all it is to draw attention to the evidence of its direct contacts with the Aegean and the Near East: Aegean style vases, and a few Cypriot ones, have been found in southern Italy and the adjacent islands, and a local industry in imitation Aegean pots emerged in southern Italy that suggests that Mycenaean potters frequented the area and passed on their technologies (Buxeda i Garrigós et al. 2003). Further, some Sardinian pots have been found on Crete, at Chania and Kommos (Pålsson Hallager 1985; Watrous et al. 1998). Nonetheless, the evidence suggests that visits from the East were sporadic and apparently had limited material impact on the Italian populations (Blake 2008).

In the Aegean and eastern Mediterranean, 1200 BCE marks both the transition from Bronze Age to Iron Age and a time of 'crisis' (Ward & Sharp Joukowsky 1992), the causes of which are still much debated (e.g. Drews 1993; Nur & Cline 2000). The collapse of the palace civilizations, entailing severe demographic

contractions and dislocations and a decline in all measures of living standards, was catastrophic. In the material record in Italy there is no evidence of any repercussions or even a slight ripple effect. The collapse of the northern Italian Terramare culture of the Po Valley is roughly contemporary with the events in the East, but there is as yet no demonstrated connection between the two events (Bernabò Brea et al. 1997b). The fact is, although there were contacts between Italy and the eastern Mediterranean in the Bronze Age, evident in goods moving in small amounts in both directions, the societies were structured radically differently and neither the highs nor the lows of the East in this period were experienced in Italy. As a result, eastern Mediterranean studies cannot help but fall short in their treatment of Italy and the western Mediterranean in this period, and therefore simply leave them out.

Not part of Europe

In temperate Europe, like the Mediterranean, the Bronze Age has benefited from an expansive scholarship exploring shared themes: warrior ideology, landscape, monumentality, and most recently, mobility and interconnections (e.g. Demakopoulou et al. 1999; Jones 2008). Italy is generally ignored in studies of Europe and relegated to a marginal place. Jones (2008) is a case in point, where the structure of this book, by theme rather than region, allows for uneven treatment of Europe's regions. Central Europe and Scandinavia receive the most attention, followed by Iberia. Italy, apart from in the chapters on the emergence of pottery and metalworking and the chapter on the Celts, is virtually absent. If included at all in studies of Europe, it is either the very north or the very south of the peninsula that is mentioned. The Terramare culture of the Po Valley area of northern Italy fits comfortably into broader European networks of the Middle and Late Bronze Ages because of the extensive evidence of interactions in the form of a metalworking *koinè* (Carancini & Peroni 1997). The southern coast of the peninsula is likewise mentioned because of its eastern Mediterranean visitors (Cunliffe 2011: 200-201). The only exception to this selectivity is Champion et al. (2009), which includes central Italy in its coverage (2009: 225).

Kristiansen and Larsson's (2005) ambitious treatment of the Bronze Age rejects the narrow regionalisms that have characterized earlier studies, in favour of a holistic view of a polyvalent yet closely interconnected world of similar religion, social and political structures, and technologies. They use the rapid spread of bronze working techniques across a swath of land extending from the British Isles and southern Scandinavia down to the eastern Mediterranean, as well as recurrent stylistic elements and object forms, as evidence for this linked world. Although they talk about influences going both ways, the bulk of their examples are of styles, objects and technologies spreading from the eastern Mediterranean and Aegean to the North and West, with horsemanship from the Hungarian steppes and Baltic amber as rare exceptions. Their Bronze Age world is one of peoples on the move, and in particular the travels of warriors and smiths, in contrast to the sedentism of the earlier Neolithic and Copper Age farmers. This mobility, they contend, resulted in the sharing of common spiritual and ideological values and practices, though inflected with regional particularities. Drawing on Mary Helms' work on the ideological significance of space and distance, Kristiansen and Larsson contend that local elites helped establish their power by demonstrating control over, or at least access to, both distant places and 'others' (2005:39-47). Because their focus is northern Europe and its contacts with the East, Italy is virtually absent from the book, the word 'Italy' appearing just 13 times in this 449-page book, according to the index. While the authors

mention the Mycenaean presence in southern Italy and the nearby islands, they also note that the array of technologies, object types and styles that link temperate Europe and the Aegean and eastern Mediterranean are not found in Italy or the western Mediterranean (2005: 126-7). Thus, Kristiansen and Larsson develop a persuasive and important picture of Bronze Age Europe, but one in which Italy is not easily placed.

Harding takes another approach in his book *European societies in the Bronze Age* (2000). As befitting the plural 'societies' in the title, Harding avoids overgeneralization, observing certain features of Bronze Age Europe that are common, such as ranked societies, fortified settlements and a prominent warrior class, while acknowledging the variations and exceptions to these features. It follows naturally then that Harding is able to mention the Italian evidence far more than other treatments have. Harding's nuanced approach demonstrates that at the macroregional scale, one must think in terms of tendencies and trends rather than universals. However, his approach is an exception.

As in the Mediterranean, there are good reasons for Italy's marginalization in studies of Bronze Age Europe. For one, the climate south of the Po Valley is Mediterranean, which has important implications for foodways and lifestyle more generally. Another feature distinguishes Italy from temperate Europe in this period, a relative dearth of weaponry and armour in graves. Harding (2000: 279) observed that in Italy there is on average less than one Bronze Age sword (precisely .77) per 1000 km², the lowest of any European region for which the numbers are available, and compared to 4.2-4.6 swords per 1000 km² in central Europe and as high as 7.61 in Ireland. Harding suggests the discrepancy may reflect differences in levels of metalworking technology in these regions, but he does observe that 'one cannot rule out the possibility that fighting with swords really was commoner in some areas than others' (2000: 279-80). As weapons of all kinds appear in smaller numbers in Italy than elsewhere, while there are numerous fibulae (Bianco Peroni 1970; von Eles Masi 1986; Lo Schiavo 2010), I would suggest that the latter explanation is the most likely. Yet another explanation could be differences in depositional practices: the Bronze Age swords that have been found in Italy primarily come from ritual deposits in watery contexts instead of in graves, which are archaeologically less visible in Italy anyway. However, this difference in depositional practices, and the relative rarity of Bronze Age burials, themselves highlight Italy's exceptionalism in the European context. The evident valorization of the sword and the identification of apparent 'warriors graves' in temperate Europe suggest a society in which warriors were idealized and afforded social and economic power (Harding 1999; Treherne 1995). Identifiable warrior's graves are far rarer in Italy and it would seem that the warrior subgroup did not make up a significant portion of the population. The difference is particularly acute in the south where warrior's graves are extremely rare (Harding 2000: 279-80). Likewise, while fortified sites of various types are known in Italy, the particular form of fortified site that prevails in temperate Europe, the hill fort, is uncommon on the Italian peninsula with the exception of some around Trieste in the far northern Adriatic. Clearly violent encounters must have occurred in Bronze Age Italy as in all societies, as the finds around Nogara (VE) indicate.² Nonetheless, taken together the evidence points to a far weaker social role for warfare in Italy than elsewhere in Europe. As Harding (1999)

describes warfare as 'a defining characteristic of Bronze Age Europe', Italy appears to be an outlier indeed.

Third, Italy's evidence for direct contact with the Aegean far exceeds that of the rest of Europe. Finds from southern Italy as well as the Aeolian islands and Sicily suggest multiple visits by Aegean peoples over many centuries, from c. 1600-1200 BC, in numbers far greater than in temperate Europe and the Aegean. Although I have argued elsewhere that the impact of these Aegean visitors on the native populations of southern Italy has been overstated (Blake 2008) it is nonetheless true that the experience of these encounters sets southern Italy at least apart from the rest of Europe. Further, the apparently bilateral relationship between Apulia and the Aegean visitors was maritime based and barely penetrated into the rest of Italy, let alone extending into other parts of Europe (Cazzella & Recchia 2005). Even the important Final Bronze Age site of Frattesina at the head of the Adriatic Sea, with clear evidence of ivory working and glass making and extensive trading ties beyond Italy, yielded only a few sherds of Aegean-style pottery, all of which have been sourced to elsewhere in Italy rather than to the Aegean (Jones et al. 2002: 254).

Was Italy backward technologically? New C14 dates for the onset of full blown copper, silver and antimony metalworking in west central Italy push the technology back to the mid fourth millennium BCE, placing its development roughly contemporary with that of the Alpine region, so it seems likely that the technology spread quickly from the eastern Alps to Italy and then on to southern France (Dolfini 2010: 719). This is far earlier than previously thought, and demonstrates that to call Italy isolated would be to overstate the situation. Nonetheless, Bronze Age Italy's ties to Europe cannot be described as strong.

Interestingly, the differences between temperate Europe and Italy do not translate into scholarly exclusion, with Italy generally included among the regions of Bronze Age Europe (see maps in Harding 2000; Kristiansen & Larsson 2005). But this inclusion is in name only. This contrasts with the treatment of Greece, surprisingly, which often features prominently in discussions of prehistoric Europe (e.g. Demakopoulou et al. 1999 with nine articles on the Aegean and only three on Italy). The reader takes away the idea that what occurred in Italy simply constituted 'more of the same' as the trends of temperate Europe. The contrasting circumstances of Italy are largely ignored, which is just as effective at silencing this history as Italy's exclusion from discussions of the Mediterranean. Earlier I mentioned Harding's work as an exception to this pattern. Earle and Kristiansen's (2010) comparative study of later prehistoric Europe, titled *Organizing Bronze Age Societies*, offers another interesting alternative to the macroregional treatments. The authors work from the bottom up, taking three microregional case studies in a multiscale approach to elucidate broader patterns of the period, such as the resistance to urbanization and state formation and the role of interregional interactions. This approach offers an important alternative to starting with generalizing arguments and eliding the disparate regions of Europe into one grand narrative.

Apart from these exceptions, however, Italy remains marginalized from discussions of the Bronze Age of temperate Europe and the Mediterranean, finding itself either subsumed into broader studies that in practice pay it little attention, or excluded from the studies altogether. The current scholarly trend is in sharp contrast to the accounts of Europe and the Mediterranean in the first millennium BCE, when Italy assumes a central place in the stories of interactions (e.g. Hodos 2006).

² At Nogara, the weapons in the twelfth-century BC graves at the necropolis at Olmo di Nogara and the nearby weapons hoard from the Tartaro River at Pila del Brancon suggest a bellicose population, possibly engaged in struggles over territorial boundaries (Cupito & Leonardi 2006; Jankovits 2000).

A place for Italy

Bronze Age Italy is thus betwixt and between, neither fully European nor (eastern) Mediterranean. But being in the interstices can offer a great opportunity to act as a counterpoint to the Aegean and eastern Mediterranean and temperate Europe. For example, one aspect of Late Bronze Age Italy (in the Italian chronology, Recent and Final Bronze Ages) that distinguishes it is its intermittent and direct contacts with the East: these visits differentiate Italy from the rest of Europe, yet the contacts were far less intense than those occurring around the eastern Mediterranean (Vianello 2005; van Wijngaarden 2002). Italy thus offers a unique opportunity to study the impact of intermittent interactions. Long distance interactions and contacts between cultural groups are topics of great interest in archaeology, and the tendency of the past decades is to emphasize the historical significance of these contacts (e.g. Cusick 1998; Stein 2005). But what of contacts that were infrequent and limited? Need these be treated as having a social or cultural impact on the groups involved? The Mycenaean and Cypriot visits to Italy constitute such a situation. As described above, the material evidence points to periodic visits to southern Italy and the adjacent islands by Aegean and Cypriot peoples, probably traders and craftspeople (Vagnetti 1999). While they occurred over 500 years, these visits appear to have been infrequent and small scale. At most one could argue for extended stays by Aegean potters at certain coastal sites, given the evident transfer of ceramic technology and an emergent industry in locally made Aegean-style pots (Bettelli 2002; Buxeda i Garrigós et al. 2003). Yet the introduced ceramic technologies never replaced local production and the pots themselves never spread much beyond their production centres (Levi et al. 2006:1095-7). Indeed, these rare visits do not seem to have stimulated Italic production in any significant way. Therefore, is the traditional treatment of these encounters as diluted versions of the more intensive cultural interactions of the first millennium BC the best way to think about them? Assessing the visits in terms of their cultural or social impact on the native groups leaves one to say they had no impact at all. Yet clearly the visits were a part of the experience of living in Italy in the Late Bronze Age, so to say that they were historically irrelevant is not correct either. Stein has warned against oversimplifying the links between material culture change and cultural change *tout court*. As he puts it,

Foreign material culture objects and styles cannot serve as direct indices for acculturation or foreign control/hegemony. Traditional domination-based interaction models assumed that if artifacts of foreign origin or style were found in the material culture assemblage of a less developed polity in an interaction system, then this necessarily implied either acculturation or economic or cultural dependence on the foreign ideology of the more developed polity. It is now clear this is often not the case (Stein 2002: 907).

I would go a step further and say that in circumstances such as Italy's, the entire approach to cultural interaction needs to be rethought. Rather than constituting weak examples of the better documented encounters of the eastern Mediterranean, I would suggest that the intermittent interactions of the Bronze Age are something quite different altogether. Instead, if we move away from the acculturation paradigm, and stop thinking about the visits in terms of cultural *encounters* and instead see them as cultural *resources*, the picture starts to make sense. By treating these foreign 'visit-events' as one more type of resource that some regions had available to them, which had some transferable value as well as some nontransferable value, we may be freed from the

obligation to push the significance of those encounters further than it should go.

In the same way that the particular circumstances of the first millennium BC Mediterranean have required modification of the postcolonial models first intended to explain modern colonialism (Lyons & Papadopoulos 2002), so may the Bronze Age encounters in the western Mediterranean inform the models for Greek-native encounters there five centuries later. Scholars studying these later contacts frame the cultural encounters as events of action and response, with the exchange of goods and the imports' subsequent use as reflective of - or outcomes of - those encounters. This may be appropriate when considering radically transformed communities such as the one at Morgantina (Antonaccio 1997). However, when there is little to no evidence of native demand for foreign goods and little detectable cultural change resulting from the contacts, the occasions of encounter are qualitatively different. Instead of measuring foreign influence in such elements as the settlement layouts, tombs, feasting activities and craft production of the native groups, what happens when we reconceive of foreign contacts of a minor sort, such as those between the Aegean and southern Italy, as a limited resource that had transferable value, like a metal, that could be moved around or restricted? This could explain the variability observed in the treatment of these objects in Italy. In some areas the imported goods and technologies were nontransferable and became inalienable possessions (in Sicily for example, where the majority of the Aegean pots, primarily closed vessels such as piriform jars, have been found in tombs (Vianello 2005: 45-6; 67). In some areas the imported goods were circulated more widely, as was the case with Cypriot-style oxhide ingots on Sardinia (Lo Schiavo 1999: 508). Nevertheless, as resources, the foreign contacts themselves show little impact beyond the circumscribed coastal zones where they occurred (Bietti Sestieri 1988: 37). Thus in contrast to the recent scholarly shift towards treating material objects as active players, I propose that in these infrequent encounters, the foreign visitors, their goods and their knowledge were objectified by the local populations. When we think of the visits (visitors + the interactions/knowledge exchange + goods they brought with them) as open to exploitation, transfer, hoarding and so on by the local population, it becomes easier to understand the variability of their impact from a local perspective. The limited nature of the visits nonetheless restricts their impact and ensures that the resource does not get dispersed far. Helms (1988) has explored the ways in which foreign knowledge conferred prestige on the travellers. Turning this around, sometimes the 'resource' of foreign visits may have conferred prestige on the locals who knew how to exploit them. As foreign contacts in the western Mediterranean and Europe were intermittent in many different periods, and may be contrasted with the intense interactions of the eastern Mediterranean, this approach may resonate elsewhere. Exploring this discrepant experience more closely may for once place Italy at centre stage in the Bronze Age.

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RECURRENT THEMES: INDO-EUROPEANS IN NORWEGIAN ARCHAEOLOGY

Christopher Prescott

Abstract: The revived interest for Indo-European questions in Scandinavian archaeology, as well as concepts concerning language and language shifts, religion, migration, ethnic identity etc., suggests that research developments do not necessarily follow a unilinear historical-typological development. Kristian Kristiansen has been at the forefront of the redeveloping interest in Indo-European studies in archaeology. Though today's studies are supported by advanced methodologies and data, a number of the central issues were addressed 70 years ago. Norwegian research history is used as a case study.

Keywords: Archaeology & language, Ethnicity, Germanic, Håkon Shetelig, Indo-European, Kristian Kristiansen, Nationalism, Norway, P.A. Munch, Scandinavia

I have regularly taught courses in the history of archaeology and archaeological thought. Although some of the associated course readings are distinct regional studies, the backbone is usually based on Anglo-American surveys, and I've predictably disseminated the widely held research historical typology of 'cultural historical archaeology', 'processual archaeology' and 'post-processual archaeology'. In my defence, I've usually pointed out that such categories are not accurate historical descriptions of individuals (who are composite eclectics, and who after all in sum make up broader trends, in general Milisauskas 2011) or for Scandinavia (Baudou 2004). As far as Scandinavia is concerned, a region with close interaction with British and American schools, the Anglo-American terminology does not fit very well - numerous developments in Anglo-American thinking ascribed to a restricted theoretical or ideological epoch, quite often have substantial and deep roots in Scandinavian archaeology. A commonly referred to case in point here is collaboration between science and archaeology in Scandinavia, exemplified with the first 'kitchen midden commissions', initially established in 1848 and directed by Jens J. A. Worsaae, and thus practically extending back to the beginning of archaeology as a scientific discipline (Baudou 2004:127; Trigger 1989:82).

For every crusading wave of theoretical belief, earlier positions are characterized, criticized, disavowed and sometimes ridiculed. When the inherent critiques of older research serve to bolster a 'new position' by proxy - validating one's own position by rebuffing others - this strategy tends to be a blunt and uninformed discursive instrument. For example, archaeology in the era of cultural archaeology is often projected as virtually atheoretical. The reign of processual archaeology is portrayed as systemic, neo-positivist attitudes to knowledge, whilst post-processual archaeology is multivocal and extremely relativist. Of course generalizations like these, often the result of a contemporary agenda, are at best inaccurate as far as the variation in what people actually did and thought. In a Nordic context, mention might be made of contributions that run counter to the perceived Anglo-American research historical typology; the debate concerning history and nomology that involved Montelius (1900) and Müller (1884) in the 1890s, the influence Fredrik Barth's (1969) 'Ethnic groups and boundaries' had from the 1970s and on, the interpretative perspectives grounded in scientific argument found in Randi and Gunnar Håland's (1982) 'World History'. Some archaeologists who weathered the 1990s could probably

argue that the purportedly 'non-conformist' archaeology (in the sense that basic tenets of valid scientific argument readily were set aside in favour of open, politically acceptable agendas, or 'exciting' perspectives) generated at times discourse and practice as authoritarian as any of the preceding traditions' practices.

The anthropologist and philosopher Ernst Gellner (1985) is among those who have contended that there are few genuinely new discoveries in the human disciplines. Most ideas have been thought before, most observations have been described before - and in the humanities 'newest' does not automatically equate 'best'. This is of course not necessarily a negative characteristic of the humanities - knowledge must be continuously internalized, contextualized and articulated. This process represents an active practice that generates insights formulated in a contemporary language - but contentions like Gellner's should perhaps engender some humility?

A relevant case: Indo-European studies

In 2009 Kristian Kristiansen gave a guest lecture in Oslo about the archaeology of Indo-European myths and religion (see Kristiansen 2004). In tracing the research history of Indo-European cosmology and religion, one of his initial points was that interest in prehistoric religion, and the acceptance of religion as a subject of archaeological study, doesn't seem to have developed in a linear trajectory, along the lines that the commonly accepted research historical typology predicates. Kristiansen contended that the interest for and acceptance of religion studies may be best described in terms of cycles. In his lecture, Kristiansen reviewed the last 130 years of researchers' interest in the theme, and had no qualms in crediting pre-war archaeologists with valuable and relevant interpretations. He then pointed out the post-war dip in interest as focus was redirected towards other themes (like ecology, economy and social structure), followed by a renewed post-processual interest in themes concerning religion (if expressed in other terms, and ontologically more constricted in scale and historical scope, cf. Melheim 2006). Advocating renewed research on the subject of Indo-European religion and myth, Kristiansen's own approach has not been an uncomplicated restoration of past arguments; instead he has brought new data, contemporary theory and methodology to the subject (Kristiansen 1991, 2004, 2005, 2012; Kristiansen & Larsson 2005).

Indo-European studies have also gone in and out of vogue, falling from favour as of the 1960s for theoretical and political reasons, but returning to favour, partly due to a renewed scale of inquiry and historicity in archaeology (Prescott & Glørstad 2012b), but also because it is hard to ignore the rise, spread and history of the earth's only global language group with three billion native speakers and probably as many people who use one of the group's languages as a second language, as marginal. Today, 'Indo-European' is accorded interest by empirically well-informed researchers (Anthony 2007), theoretically advanced researchers (Kristiansen 2012) as well as the 'fringes' that pursue a traditional ascriptive approach (for example on internet sites).

'Indo-European' is primarily – many linguists would probably contend solely – a linguistic term (Anthony 2007: 11; Wikander 2010:166ff). Archaeologists tend to expand (at times to the dismay of linguists?) the term's application to encompass religion, symbolism, ideology, social organization and way of life (e.g. Dumezil 1958; Odner 2000). The archaeological premise and corollary is that language is not simply a vehicle of communication, but also bound up with – structured and structuring (to paraphrase Anthony Giddens [1982]) – other ideological, cognitive, social and cultural institutions. Fundamental change in the material expressions related to such institutions thus serve as proxies indicative of changes in systems not directly observable in material remains – like language. A related premise/corollary is that language is a powerful tool but not a neutral medium of communication – it constrains and promotes modes of thought. Expansion of material traits or groups might be explained by a potentially tautological argument: A language's superiority in a situation of human ecological competition explains the expansion of a set of traits or people, or a people's successful expansion is explained by the superiority of their language (e.g. Childe 1925).

In studies of identity and ethnicity in prehistory, archaeologists risk falling back on simplistic ascription (materials 'a' = culture 'a' = language 'a'), despite explicit theorizing that argues a more sophisticated approach (Barth 1969; Jones 1997). This is an old lesson – but one that will probably always be relevant. Still, material culture identified in conjunction with comparative studies of IE-languages is essential for linguistic dating exercises, as well as arguments concerning homelands (Anthony 2007; Mallory 1989), spread and history. Despite the risk of circular argument in interdisciplinary endeavours to interpret non-material sides of human history, anthropology and sociology by combining archaeology, religion, language and, increasingly, molecular biology (Kristiansen 2012; Kristiansen & Larsson 2005), the embedded nature of language and material culture supports a contextual approach. An extreme position here circumvents the methodological and empirical minefield that archaeologists experience comparative linguistics to be, is to emphasize Indo-European myths and then evaluate Indo-European practices and social organization in light of these (Odner 2000:104) – ironically, by and large avoiding linguistics.

Western Scandinavia – at the far end of the Indo-European scale

Kristian Kristiansen's research has been instrumental in the revitalization of Indo-European studies (and the related issue of migration [Kristiansen 1991]) as a legitimate field in archaeology. Though adopting a broad historic, thematic and geographic approach, Kristiansen seems to be driven by a combination of fascination with the subject matter and opposition to the

predominant negative Nordic attitude to Indo-European research and migration.

Scandinavia and Norway are not the natural focal regions of IE-studies (despite the political abuses that have at times festered in the Germanic regions), indeed they are the geographical opposite of regions of traditional interest like the Pontic steps or Anatolia (Anthony 2007; Kristiansen 2012). Still, Scandinavia is of interest for several reasons. Its marginality, far from the nomadic steppes of horse riders of the steppes or city states around the Mediterranean, creates a compelling comparative case of late IE-spreading in prehistory. As an area on the margins of Germanic, Slavic and Uralic languages, where northern, southern, eastern and western influences meet (Prescott & Glørstad 2012a), it illuminates long term processes in European ethno-history. Finally, the political, ethnic and research political weave of archaeology, linguistics and identities make it a fascinating case of research history.

Scandinavian taboos?

In Norway the concept of Indo-European has a long history that quickly arose in the wake of William Jones' conclusion that Sanskrit, Latin, Greek and several other Old World languages had a common origin (Mallory 1989:11f). Jones' conclusions rapidly influenced the way people and societies thought about themselves and about their histories in much of the Old World (Anthony 2007), and Norway was no exception. This peripheral region was drawn into the romantic and in time social-Darwinist and nationalist narratives bound up with broad ranging concepts of Indo-European that referred back to Jones' linguistics.

Since the advent of comparative Indo-European linguistics, the fundamental role of language – historically, anthropologically, psychologically and in relation to the sociology of knowledge, mentality and symbolism – has become widely recognized. It is therefore surprising that the study of language in prehistory and the integration of such studies in broader archaeological interpretation has not remained a more mainstream and developed contemporary field in Northern Europe. This may be explained by a multitude of factors, but I would venture that in a survey among contemporary northern European archaeologists the number one argument would be 'we cannot archaeologically observe language before we have written sources'. If, in this hypothetical survey, there were a column for free comments, I'm certain a majority would add 'interpretations of language are speculative' and 'politically dubious'.

In a broader perspective, the above 'positivist' attitude to language history is a paradox for primarily two reasons. First, against the backdrop of the last 30 years of postmodern archaeology (that without inhibition approached immaterial themes far less empirically and methodologically grounded than Indo-European language), as well as the preceding processual archaeology's initial contention that given proper methods virtually all sides of human existence can be investigated, it is indeed strange that language, and particularly Indo-European language, is epistemologically and ontologically off the table. Second, the common elements of language and myth from the Himalayas to the Atlantic (and today, around the globe) are among the most fascinating subjects to be had.

On the northern Indo-European margin: Norway

In 1786 Sir William Jones noted that Sanskrit bore a resemblance to Greek and Latin, and created comparative Indo-European (IE)

linguistics. A group of languages, in the Old World are related to each other and have a common source. Though initially a term concerning language it is hardly surprising in light of the then reigning concept of ethnicity that it became associated with peoples and cultures (Anthony 2007; Mallory 1989). The fascinating reconstructions that identified environmental, material and cultural elements central to the speakers of various IE-languages had and has a cultural historical impact (Anthony 2007), and the results of comparative IE-linguistics spilled over into history, if for no other reason than that languages do not spread on their own. Languages move with their speakers, who meet and communicate between themselves and those they interact with. Furthermore, language change does not happen in a vacuum. There might conceivably be aspects of a given language that render it a superior tool for some reason, thus leading to its adoption, but more commonly, it is spread within a broader economic, political, migration or military context. The spread of the language and the concepts of the peoples who spoke or adopted the language, evoked generalized pictures of Indo-Europeans and their cult, cosmology, hierarchical social forms, and practices. These pictures have largely survived political agendas, whether Germanic expansionism, Hindu-nationalism or Gimbutas-style mother goddess feminism.

Moving from generalities to the specific national case of Norway, some strands of research history perhaps illustrate the role of cultural history in the national projects in Northern Europe. Norway is a sparsely populated nation on the periphery of Northern Europe. From 1380 to 1814 it was junior partner in various unions with Denmark. As part of the settlement after the Napoleonic war, Norway was awarded Sweden and entered a union that was dissolved in 1905. Norway was a ripe candidate for developing national, romantic myths based on early and prehistory – myths designed to include the nation in a broader European community of nations, at the same time bolstering internal identity and cohesion – in short nation building (Prescott 1994). After the Second World War Norway evolved into a progressive Scandinavian state, whilst the archaeological community was strongly influenced by academic and philosophical trends out of Britain, and at times America.

P.A. Munch (1810-1867) and Rudolf Keyser (1803-1864) are often celebrated as instrumental in creating a modern national history discipline for the emerging Norwegian nation, and indeed they had an overarching goal of serving the national cause.

Historians everywhere seek to emphasize what can serve to glorify their own nation. For centuries the political situation in Norway has been cause, to a greater extent than for most nations, to see her nationality forgotten, and that the part of [Norway's] history that was part of world events was either ignored or portrayed in an inaccurate light. One could fear that this forgetfulness, ignorance or inaccurate portrayal would last and become consolidated in our age's historical competition - if a Norwegian historian himself did not collect and publish everything old and brought forth recent studies of his fatherland's history, sought to counter the false notions that otherwise, if the field was left to a foreigner, probably would have proliferated. (Munch 1852:v, translations by CP).

Munch naturally offers no apologies for his national agenda, indeed it is in his view the rationale and purpose of history, e.g. '...and the works witness my continuous toil, to the best of my capabilities, for the nation's honour and interests.' (op-

cit. 1852:xiii). Munch is also clear on what constitutes the nation at the core of his interest – a nation that transcends ephemeral politics and economic episodes - when he explains why his book is entitled *The History of the Norwegian People* (*Det norske folks historie*, 1852-54) – and not 'Norway's history' or 'The Kingdom of Norway's history'. The people in the landscape, and their common history, constitute the genuine nation.

In mid-1800s the historical sources available for constructing national identity and inspiring national greatness were limited. It is therefore perhaps natural that Munch held language history and comparative Indo-European science in the highest regard – it was an anchor for chronological depth and geographical width, and language has continuously played a part in national agendas. Though archaeology was afforded honourable mention (Munch 1852:15), at the time it was not significantly developed. Language, folk myths and antique Germanic and Classical texts were the sources accorded importance in Munch's narrative of the people that are the nation. Based on linguistic arguments, Munch and Keyser define the Scandinavians as a branch of northern Germanic. In reference to comparative Indo-European studies this branch of Germanic was held to originate from a migration out of Iran (Keyser 1866). Though mention of other folk groups is made (e.g. the idea of the Indo-European's eternal opponent the Turanic race; Mongols, Turkish and Finnish-Ugrian peoples), it is the Germanic tribes that are the narrative focus. The aim is to fit existing folk, race and nations into the historical linguistic framework. Thus these studies, though drawing heavily on available historical sources, linguistics and myths, do not represent a genuine cross-disciplinary discourse. I imagine these early studies could serve as examples of what generates the virtually programmatic scepticism to general historical narratives among comparative Indo-European linguists.

Keyser and Munch faced the most opposition with their theories drawing on old speculations that the Norwegians had a separate, more northerly immigration route than the Swedes and Danes (Daa 1869). The empirical basis for Keyser's and Munch's contention was weak, but the political rationale was probably to provide a differentiated national genesis and perhaps also an ethnological part of the preoccupation with diachronic differentiation that preoccupied comparative Indo-European linguistics in the latter part of the 1800s. Still, the basic project of tracing languages and folk groups met little resistance. Norwegians, it was argued, had a unique historical position compared to other countries in that the history of the land and of the people started simultaneously. Human settlement started with the immigration of northern Germanic groups, there was an unbroken bond between people, language, traits and land. The concept of people, society, culture and country mutually shaping each other into something unique has been both an archaeological and a political concept up to the present.

In 1829 Rudolf Keyser became the first director of the university's collection of antiquities in Christiania (today's Oslo). The fascination for archaeology he shared with Munch was put to use at the Museum, and he set about ordering the collections along the new principles of C.J. Thomsen's (1836) three period system. Throughout the 1800s the Museum was a particularly conservative institution, but around the turn of the century a new generation of archaeologists developed the discipline, influenced not least by Montelius' continental culture historical and evolutionary perspective (especially Håkon Shetelig, later professor in Bergen) and general materialist and environmental ideas (A.W. Brøgger in Oslo) (Hagen 1997). The collections and archives also expanded.

The methodological and theoretical developments in the wake of Montelius, especially emphases on context, refined chronology and growingly sophisticated systems of archaeological cultures, were of a completely different order than that used by Munch and Keyser. A programme for more detailed ethno-historical settlement studies took shape. The questions posed were more sophisticated, for example concerning the implementation of agriculture, the rise of Bronze Age society, relationships between specific cultural groups, iron metallurgy and prehistoric use of the uplands (Hagen 1997).

Tying questions of production mode, ethnicity/race and settlement to archaeological categories became an exercise in the wake of Sophus Müller's (1898) and P.V. Glob's (1945) studies of the Single Grave Culture (a Jutish branch of the Nordic Battle Axe/European Corded Ware Culture). A marked case in Norway is found in Gutorm Gjessing's (1945) 'Norway's Stone Age' (Norges Steinalder) from 1945. In this study of developments in Norway, Gjessing basically divides artefacts into 'hunter-gatherer' (e.g. slate projectile points), Megalith (i.e. Funnel Beaker, e.g. flint axes), Battle Axe (basaltic battle axes) or Dagger Period (Nordic Late Neolithic, flint daggers). Through this direct method of cultural ascription, Gjessing created a high resolution distributional synthesis of modes of production related to ethnic groups, and their characteristics. This represents a localized history of their migrations, pretty much in line with *siedlungs-archäologische* concepts evolved from Gustaf Kossina (1911), resulting in a regional scale patchwork of older hunter-gatherers, Neolithic farmers (TRB-style) and two Indo-European farming groups. Apart from the empirical shortcomings that are always seen in retrospect, from the point of archaeology the ascription method was unqualified and mechanical. From a retrospective (but not just, see below) anthropological view the concept of a primordial folk type was misguided, from a linguistic point of view there was little argument for association with language groups, and from an economic and technological point of view the association between ethnicity, materials/technologies and form of production was too simplistic. All in all, studies from before 1950, like Gjessing's, validate the rationale for the critical attitudes towards this kind of cultural history that brought ethnicity, migration, Indo-European and linguistics into disrepute after WWII. As such they substantiate the retrodictions of the Anglo-American research typology.

...but is multivocality new?

However, as is common through research history, there have been alternative voices that supply another narrative – quite often with insights more inspiring than mainstream consensus. In 1936 Håkon Shetelig¹ published an eight page article in *Fritt Ord* ('Freedom of speech'), a liberal Christian journal dedicated to tolerance in religious and moral issues, and humanist ideals. This article is remarkable in its modern outlook, but also its stringency and important, mildly phrased critique of archaeological trends. The article, entitled *Germanernes avstamning under arkeologisk synspunkt* ('The ancestry of the Germans from an archaeological

perspective'), initially confirms that the German people are a well-defined concept and a main group of peoples in our hemisphere, bound together by the heritage of a common language, a branch of the Indo-European family of languages. A region of Germanic language, however, does not equate any concept that can be called a race, and contemporary German speakers are a 'complex mixture'. One of Shetelig's further concerns was that much history concerning the Germanic tribes was based on Roman observations and their narratives. Such written sources were highly biased and inaccurate. Shetelig reviews various alternatives of origins, finding shortcomings with several arguments concerning unified Germanic migration, and uses the opportunity to critique Kossina and his ideas about Germanic space, language and people. Shetelig argues, not surprisingly, that only archaeology can actually provide a more solid platform for understanding the context of early history. Central here is the discussion concerning the Corded Ware. Shetelig opposes Kossina's (see Mallory 1989:269) (and Nils Åberg's 1949) contention that the Corded Ware and the Indo-Europeans evolved in northern Germany and southern Scandinavia. Instead, Indo-European languages, beliefs, symbols and ideology were initially introduced with Corded Ware immigrants from the south-east. The implications for pre-war archaeology and Kossina's hypotheses concerning the Germans were far-reaching. Shetelig picks up some points elaborated in post-war theoretical discussions, but also points out some of the theoretical and interpretative elements in continued work with language, ethnicity and history. Thus, though he does not abandon ethnicity, language and migration, his indirect critique of the political use of archaeology echoes discussions to come.

Shetelig's position grew out of his background (a student of Montelius), contemporary politics and his keen insights into European prehistory. However, when he points out that uncritically projecting Roman literary sources is flawed, that language, culture and people are not congruent, that contemporary European ethnicities cannot be explained by theories of primordial indigenous populations, and that ethnicity and demography are the result of an ongoing process, he is drawing up a theoretical map that is unmistakably modern. When he points out the massive Indo-European transformation of language, production, religion and society with the Corded Ware phase, he summarizes a programme of relevance for today. And finally, when he acknowledges that the Corded Ware Culture did not affect the north-western parts of Scandinavia, and that the Corded Ware transformation of Scandinavia retained enigmatic elements, he points out one of the major cultural historical problems in Scandinavia: the Corded Ware is not the immediate source of farming, metal-using, long distance and maritime travelling societies in Northern Europe. Apart from a coherent political statement and the use of Indo-European research to counter chauvinism, this remarkable article pretty much drew up a conceptual and theoretical programme for understanding the rise of Northern European societies.

Lost opportunities

In 1936, the archaeological material and methods could not sufficiently illuminate the limited Corded Ware impact, the massive mid-third millennium transformation leading to the Nordic Late Neolithic or the intricacies of third millennium history (Prescott & Glørstad 2012a). However, Shetelig's insights would have been an excellent platform for asking pertinent questions and making sense of the data produced since the war. The experiences of the 1930-40s and the interpretative shortcomings of mechanical ascription created a reserved scepticism in the early post-war generation to Indo-European language studies, ethnicity, migration

¹ *Haakon Shetelig (1877-1955) was professor in Bergen from 1914 (Shetelig 1995). A student of Oscar Montelius, he had a strong cultural-historical orientation in his work, and emphasized the European and diffusionistic background for developments in Northern Europe. In 1936 Oslo hosted the second congress of the International Union for Prehistoric and Protohistoric Sciences (UISPP). There was significant turbulence, as the official German stance was that Gerhard Bersu, a prominent German archaeologist who fled Germany in 1935 after a slander campaign that had him removed as head of the Römisch-Germanischen Kommission, be excluded from the executive committee. Within the national organizing committee for the second UISPP congress there were diverging attitudes on how to respond to German pressure. In the ensuing correspondence Shetelig held the same position that Gordon Childe did: there was no room to accommodate Reinhart and the German demands.*

and large scale (continental) contextualization. This is clearly seen in important studies published by Erik Hinsch in 1956. Though not abandoning the framework established before the 1950s, he was guarded in terms of ethnicity and migration.

Hinsch's approach might be an omen of the theoretical winds that would transform Scandinavian archaeology in the aftermath of Mats P. Malmer's 1962 *Jungneolitische Studien*, and the disenchantment with folk groups, language, religion and migration as an archaeological focus. Tradition, evolution, economy, ideology, environment, ecological adaptations and social tensions replaced the explicit cultural historical themes. A concurrent trend was a localized contextualism. However, to paraphrase Fredrik Barth (1989) with the collapse of diffusionist perspectives, mainstream archaeology was without tools to genuinely compare regions and generate historical narratives. Instead, a pronounced trend in Scandinavian archaeology could be critically characterized with Barth's term 'myopic localism'.

Babies and bathwater

Numerous practices within cultural historical archaeology deserve critique. Still, there are large scale streams in the Old World, cultural traits do diffuse in a systematic fashion, migration is a plausible explanation for many archaeological patterns, change can be dramatic in prehistory and Indo-European languages spread throughout Eurasia in prehistory. In placing such themes outside the ontological realm of archaeology, the baby was thrown out with the bathwater (Anthony 1990).

Fuelled by new methodologies, comparative insights and detailed data, questions concerning Indo-European language, religion and ideology have resurfaced, along with more ambitious concepts of migration, cultural streams, domination, transformation, structure and history, as concepts and themes – also in Norway (Prescott & Walderhaug 1995). In a Scandinavian and European setting, Kristian Kristiansen has spearheaded these developments (1989, 2004, 2012). The analytical and interpretative perspectives that have ensued have been genuinely invigorating, and in light of contemporary globalization and global migration, they are part of a renewed context of relevance for the perspectives that can be gleaned from archaeology. Based on the oscillating research history outlined above, one can ask what the future brings: will the important historical perspectives inherent in Kristiansen's work be developed to better understand history, and the world we live in, or will the pendulum once again migrate to an extreme?

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COLLAPSE OR RESILIENCE?

ARCHAEOLOGY, METAPHOR AND GLOBAL WARMING

Orri Vésteinsson

Abstract: The paper considers recent trends in describing historical developments in terms of 'collapse' or 'resilience', analysing the debate in the context of the global warming crisis and current beliefs in growth as a precondition for prosperity. It suggests that there is no such thing as societal collapse and that it is not meaningful to talk about resilience of human societies. It argues that archaeologists could fruitfully turn their eyes to the contrasting processes, downscaling and simplification, which could potentially offer useful insights for current problems.

Keywords: Collapse, resilience, global warming, growth, downscaling

Introduction

We face an uncertain future. From practically unrestrained optimism about mankind's possibilities in the 1960s we have steadily become gloomier about our long-term prospects. The realisation, which sank in with the oil crisis in the 1970s, that the basic resources which our economy is based on are not infinite, has been followed by growing concern about the impact of global warming and the harm we are doing to our planet. The last decade has seen climate change elevated to the centre stage of mainstream politics. That change is occurring can no longer be denied and instead the debate is about how worried we should be and whether we should be doing anything about it, and if so, what? The outcome of that debate is far from certain. Academia, with remarkably little dissent, and most international institutions are in no doubt that we should be very worried indeed. The public, however, wavers between the desire to be carefree, urged on by the captains of industry and short-termist politicians, and outrage over the inaction which is edging us ever closer to the precipice. For those who are worried there is not enough of the outrage. Many responsible scholars have sought arguments for the real and present danger of climate change, so clear and devastating that they could knock the doubters off their feet in one fell swoop. One of the biggest challenges in this has been the widespread notion that climate is governed by forces of nature far beyond the control or influence of humans; that however much we pollute and mess with the environment, nature is still larger than us and that it will carry on regardless of what we do or don't do. In order to counter such ideas scholars have sought examples from the past to demonstrate that societies not only have radically altered their environments for the worse, but also that they have often suffered terrible consequences.

A best-selling book reflecting this approach is Jared Diamond's *Collapse: How societies choose to fail or succeed* published by Penguin in 2005. It is a book that must be lauded for its aims: to show that we damage our environment at our peril; but it has also produced a strong reaction, particularly from archaeologists who have criticised Diamond's prehistoric cases and found his argumentation seriously flawed. For example, a collection of essays attempting to refute Diamond's case stories, chapter by chapter, is *Questioning collapse. Human resilience, ecological vulnerability and the aftermath of empire*, edited by Patricia A. McAnany and Norman Yoffee (McAnany & Yoffee 2010).

The arguments against Diamond's theme of collapse vary from one case to the next, but if there is a unifying notion it is about resilience. These critics of Diamond suggest that societal collapse is rare or non-existent and that the human response to external problems is characterised rather by resilience, the ability of a system to absorb shocks but still retain its structure.

Collapse and resilience are both problematic concepts, as is their supposed opposition, and it is this I would like to review in this essay. In both cases I think the problem lies in the abuse of metaphor, but in addition neither position really offers any useful guidance for the problems of the present. Good causes are done no service by misrepresenting the past but neither can we aim to learn anything from the past if our understanding of our present woes is based on superficial analysis. Underlying the themes of both collapse and resilience are other more deeply anchored views about progress and growth which we need to question if we are to make any real progress in changing our current course. What is more, prehistory actually offers real examples of how societies have successfully changed course and abandoned escalating growth. I will consider such examples towards the end of the essay as a suggestion of a more rewarding avenue of research for archaeologists interested in influencing current debate and policy on climate change.

Collapse

.... this iniquity shall be to you like a breach in a high wall, bulging out, and about to collapse, whose breaking comes suddenly, in an instant; and its breaking is like that of a potter's vessel that is smashed so ruthlessly (Isaiah 30:13-14, Bible, English Standard Version).

Any edifice that protrudes in one way or another and is made of friable material can collapse. The term carries with it a sense of abruptness and finality; collapse happens suddenly and it is irrevocable. Whatever may be built anew will never be exactly the same – collapse marks a finite ending of something whether or not it is followed by anything else. Collapse is more dramatic than e.g. a fall, and much more so than mere decline, and as such it is better suited for newspaper headlines: it is more sensational and therefore more likely to grab our attention. It carries with it a resounding *whoomph!* This dramatic quality, the sense of swift and complete destruction, makes collapse a juicy metaphor in all

sorts of contexts. It can be an apt metaphor whenever we want to describe the ending of something massive which had appeared solid and likely to endure, especially if that something had lasted for a long time and was considered essential (as in Tainter 1988). Banks collapse while corner stores close.

The idea of collapse evokes fears about the transience of the things we take for granted: we cannot know what the future holds, but in order not to live in constant fear we allow ourselves to assume that those things which have lasted for a long time will continue to do so. But what if they do not? We do not like to entertain the thought that the long-lasting things which frame our lives might suddenly disappear or change drastically, but as we have no guarantees about this our fears can easily be cultivated. This is what Jared Diamond is out to do with his collapse metaphor: to suggest that if we do not stop messing with our environment we may suffer collapse in the same way as he claims those past societies did. The problem is not only that the cases Diamond presents are not convincing (Tainter 2008; 347-52), but at a more fundamental level that the metaphor he has chosen does not sustain his message. It is not a theory-constitutive metaphor (Boyd 1979) – a metaphor which deepens understanding of a phenomenon, like Bohr's metaphor of atoms as miniature solar systems – but rather a generative metaphor (Schön 1979; see also Dunbar 1995; 141-56); a rhetorical device, aimed not at deepening understanding but rather at selling a particular viewpoint. It can easily be undermined simply by constructing alternative, equally or more plausible, narratives. It is hardly by chance that Diamond does not consider the collapse of the Western Roman Empire, the best known of all such cases. The main reason is probably that a coherent case cannot be made for this to have been caused by environmental problems, but it is also a case which has received so much scholarly attention, about which so many reasonable theories have been proposed (Giardina 1999; Ando 2009), that it would be impossible to present the sort of one-track argument about it that Diamond has to resort to in the cases he does discuss.

Diamond's view of collapse is predicated on a more deep-rooted notion that things should persist, that it is a good thing if they do and that it is a sign of failure if they don't. This is a generally held view, reflecting our satisfaction with our own imperfect world and our fears for the future. But change is not necessarily bad, and neither is collapse. Few now mourn the collapse of the British Empire for instance; even if it was unquestionably a painful process for many people involved it was no more painful than the process of building or maintaining that empire, and it is difficult to see how e.g. the British people are, on the whole, now worse off on account of its demise.

Modern economics assumes that persistence is not enough, that there must also be growth. Escalation is the only way to go and when there is even just a slight slowdown it produces panic in markets and governments. Most of the cases considered by Diamond had seen escalation of one sort or another and in some cases, as in Rapa Nui, it is the cessation of escalation that to outside observers has looked like a sure sign of catastrophe. What really happened was that the people of Rapa Nui stopped erecting their big statues and instead developed another cult, equally fascinating but not as monumental, the Birdman cult (Tilburg 1994; 54-62). No population decline can be associated with this change and there is really no evidence that it was problematic one way or another. The problems came with the Europeans, their diseases and slave traders; the real cause of collapse on Rapa Nui (Hunt & Lipo 2010). But escalation can also be the actual problem. In Norse Greenland there are clear signs of escalation

in the fourteenth century AD, just prior to the abandonment of the colonies there. Not only was there clearly major investment in monumental architecture in the first decades of the century, but following the colonies' union with the kingdom of Norway in 1260 they began to be served by regular shipping (Magerøy 1993). The kings had a ship dedicated to the Greenland route which sailed regularly down to the 1360s, when it stopped (Seaver 1996). In Greenland the environmental case has been flogged to the bone and it really looks increasingly difficult to blame either climate change or environmental degradation for the demise of the Norse colonies there (e.g. Dugmore et al. 2009). Rather it seems that the abandonment may simply have been a response to the sudden bout of disinterest exhibited by the central government in Norway (Arneborg 2004; 278). It was not that life in Greenland was worse in the late fourteenth century than it had been earlier, say in the early thirteenth century, but rather that it had become much better and then when improvements ceased and even began to be scaled back the Greenlanders realised that they were a backwater which could not compete in terms of quality of life with other parts of the kingdom. It is in situations like these that the young people start to leave and that will have spelled doom for these small and isolated settlements. That can be called collapse, but only if we think that eking out an existence in this most peripheral of peripheries was a right, good and necessary thing to do. For those of us who think that it wasn't it looks like a resilient response to changing circumstances.

Resilience

Unlike collapse, the concept of resilience has a real scientific pedigree. It is a concept developed in ecology (Holling 1973) but in recent years it has found application in archaeological and historical analyses, particularly among scholars who ascribe to the Historical Ecology school of thought (Crumley ed. 1994) or other derivatives of processual thinking in archaeology based on Systems Theory (Redman 2005; see also Gunderson & Holling eds. 2002; Folke 2006; Norberg et al. 2008). Much ecological research has conservationist underpinnings and the idea of resilience emerged as a way to study why some ecosystems seem to cope better than others when faced with comparable negative impacts. A resilient ecosystem, then, is one that can absorb disturbance and undergo change without transforming its general functions and structure (Walker et al. 2004). In other words, resilience is a measure of the ability to last, and it takes for granted that lasting is an end in itself. This we all do when it comes to the natural environment: we think it is lamentable when pollution kills the wildlife of an area, when erosion turns lush grasslands into desert or when an invasive species eradicates the native ones. This is not as straightforward when we think about human societies. For one thing the distinction between the 'system' and the 'impact' that is negatively affecting it tends to be much less clear; the negative impact is as often as not a product of the system, which makes it difficult to cleanly assess it. A society that has problems with soil erosion of its own making, will be different than if it had not triggered that erosion in the first place; it may be more resilient on account of the gains it made from overexploiting the land.

A more fundamental problem, however, is that it is difficult to see how resilience can be measured or systematically compared between societies. There is really only one measure of resilience and that is extinction. And even that is problematic: were the Neanderthals not resilient just because they made the mistake of becoming extinct (if that is indeed what happened – see Green et al. 2010)? Does it count for nothing that they existed for even

longer than Anatomically Modern Humans have so far (Hublin 2009)? It is doubtful whether it is meaningful to discuss them in these terms. Neither is it appropriate in cases like that of the Norse Greenlanders mentioned above. On the face of it, the demise of their colonies seems to represent an absolute lack of resilience, but as I have shown an argument can be made that their moving away was in fact a very resilient thing to do. The same holds for all other cases one can think of: it is possible to have at least two opposing views about a given society's resilience. Take for instance the potato blight in Europe in the 1840s. In Ireland it caused a major famine with more than a million people dying from malnutrition and associated diseases and twice as many again emigrating, mainly to America (Donnelly 1989; 351-53). The Irish population still has not regained its pre-1840s numbers and the Great Famine is considered a traumatic and defining moment in modern Irish history (Ó Grada 1999). The potato blight also ravaged many other parts of Europe, including the Prussian part of Germany, causing famine and widespread social unrest (Bass 2010). But in German historiography this episode is not given nearly the same weight as its counterpart in Ireland. Partly it is because in Germany the blight, while serious, did not cause anything like the same scale of tragedy, but also because German society was able to deal more effectively with the problem and recovered from it much more quickly. Now, which was the more resilient? Was it Germany which had a more varied economy and was therefore not as hugely vulnerable to a single pathogen or was it Ireland which despite its enormous vulnerability still pulled through, maintained its social structure and developed, belatedly, into the industrial nation it now is? Or was it Ireland with its efficient migrant networks in the New World (Delaney & MacRaild eds. 2007) which showed true long-term resilience while Germany unleashed two World Wars on its neighbours and lost its East-Prussian territories as a result? It takes only short reflection to realise that there are no good answers to this question, and that whatever answers we might propose would arguably be more revealing about our prejudices and ideological opinions than about the two societies concerned.

It is possible to measure resilience when the thing under measure has few and well defined parameters which can easily be related to why they may come to an end. This applies to trees, but also phenomena like marriages, farms, governments or corner shops. These are things that are ending all the time, and it is unambiguous when they end, and it is interesting to study why some last longer than others. Societies do not end, at least not in comparably unambiguous ways. Society did end in Norse Greenland and Hohokam (Hegmon et al. 2008) in the sense that without people a place can have no society, but the people who had lived in those societies and decided to abandon these places lived on and probably felt that they had brought the significant parts of their societies with them. Apart (perhaps) from the Neanderthals it is difficult to demonstrate any case where everyone in a society died, where there was an absolute stop of both genetic and cultural continuity; despite our fascination with extinction no unambiguous case of it can be shown. This is quite a contrast to the natural environment where extinctions, local as well as complete, happen frequently (Ceballos et al. 2010). The reason that resilience theory cannot be applied as readily to human societies as to ecosystems is not that there is some essential or fundamental difference between the two; human societies are a part of the ecosystem. The reason is rather that ecological theories operate at a higher level of abstraction; they take as their basic units whole species and they measure them simply by numbers. Such approaches have been applied fruitfully to human contexts (notably Crosby 1986), but as a rule they cannot address those aspects of the human

conditions we tend to be most interested in: why people behave the way they behave. The thing with humans is that they have more options than live or die, and as a result what fascinates us about them is not so much whether they live or die, but rather what they do with their lives.

Learning from the past

Although McAnany & Yoffee (2010) see resilience theory as an alternative approach to the notion of collapse the two approaches actually go well together. The reason is that they are both based on the same basic attitude, namely that that which is good, and that change is potentially bad. The alarm we feel when we think of collapse triggers our fears for the future; we do not want our society to collapse, and the appeal of the idea of resilience stems from our concern to conserve the environment. Both represent the same fundamental urge: to hold on to what we have and resist changes to it.

As I have already mentioned this urge also underpins current beliefs about the necessity of growth, the belief that our society is sick if it does not register economic growth on an annual basis. This is obviously an unsustainable course in the long run as has long been known (Meadows et al. 1972), but we cling to it. One reason for this is that it is difficult to imagine what our society would look like if there was not growth: would it then not collapse?

This is where we really can learn from the past. Not only is the past full of examples of long periods of economic stability or such slow growth that it would not register among the 'economic indicators' we use in the present, but there are also a number of intriguing examples of escalation followed by down-scaling with no obvious signs of trauma or distress for those involved. These cases of down-scaling can be seen in terms of rationalisation, a realisation that a society was on the wrong course and successful measures being taken to divert that course even if it must have meant the dashing of some people's hopes for increased wealth and authority. I hazard that the so-called Maya collapse (e.g. Webster 2002) may be one of these, but a more clear-cut case comes from Cahokia on the Mississippi. This, one of many ceremonial centres in the region, experienced rapid growth in the second half of the eleventh century AD, with monumental buildings on a scale previously unknown north of Mexico. It quickly dwarfed its counterparts but then, after a period of stability, went into decline and was more or less deserted by AD 1300 (Pauketat and Emerson eds. 1997). The decline cannot be ascribed to either external attacks or internal problems of subsistence. Rather, it seems that this was a case of people finding that further escalation was not possible (possibly because of environmental constraints) and that rather than continue to escalate anyway they simply abandoned monumental building and the ceremonial that went with it in favour of some other equally effective, but less costly, mode of being. The people of Rapa Nui did the same, as we have seen, and so have many other peoples through world history.

Faced with the global warming crisis, this we can do, too. Indeed we will have to, sooner or later, and rather than offer scare-stories or dabble in theories that allow us to think that change can be avoided, we should develop our capacity to think of alternative paths to endless growth. It is a matter of survival; in order to choose the path which leads away from the precipice we need to be able to see it clearly, to conceptualise what sort of future that could lead to. To begin to believe that this is possible it is easiest

to turn to the past and learn from its numerous cases of non-growth stability and down-scaling.

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ON RIVERS, MOUNTAINS, SEAS AND IDEAS - OR WHAT VAST SPACES AND LONG LINES MEAN TO CULTURE AND HISTORY

Carsten Paludan-Müller

Abstract: The present paper proposes an approach that embraces the consequences of Europe being at the same time a vaguely defined geographical entity and a particular part of the global space with its own unique features. The approach is among other things inspired by geopolitical analyses and international relations theory. It aims at pointing to a potential contribution of European archaeology to the understanding of Europe as a particular part of the global space through deep time analyses of the interaction of cultures with space. By including geopolitics and international relations theory into our horizon, we as archaeologists will find help asking questions and establishing perspectives that will strengthen our capacity to put some of the big questions of our own time into a perspective that reaches further in time and space. History has never stopped, and there are some logics and lines that have never been broken; these are logics and lines that link the distant past with our own present. It is my hope that this brief introduction to some key contributions by the two disciplines will help the reader appreciate this.

Keywords: Geopolitics, International Relations Theory, post-processual, empire

Provincialism in archaeology?

In their grand perspective on the transcontinental unfolding of European Bronze Age culture, Kristiansen and Larsson begin by addressing the impact of the processual and the post-processual archaeological paradigms on the discipline and its capacity for explanation. They point to the restricting effects of those two paradigms upon our ability to grasp and to understand phenomena on a supra-regional scale (Kristiansen & Larsson 2005: 6).

The processual and the post-processual paradigms followed upon earlier paradigms that had opted for exogenous explanations such as diffusion and migration in order to account for change on a continental scale. There were several reasons for the fall of the exogenous explanations. One was evidently the rise of C-14 dating, and even more so the dendrochronological calibration that revolutionized the sequencing in time and space of innovations such as the megalithic constructions that occurred over vast tracts of the European continent, and in fact far beyond (Renfrew 1971: 66-67).

Another reason for the dismissal of diffusion and migration was their generally schematic application that took little interest in local preconditions and processes that, for instance, might have led to the acceptance (or rejection) within a local community of a diffused innovation (Clarke 1973: 6-18).

With the advent of processual archaeology came a sweeping refocusing on the analysis of how communities on a local and regional scale managed to cover their basic needs. Subsistence economy and settlement patterns became important with a lot of inspiration from social anthropology, ecology and from human geography (Binford & Binford 1968; Clarke 1968).

What faded out on the other hand was, with a few exceptions (such as the neolithization), the engagement into the analysis of change on a continental scale. The power of the new theoretical and methodological approaches seemed much stronger on a local and regional scale than on a continental one. Site catchment analysis and other spatial oriented methods taken from, or inspired by, human and economic geography were definitely capable of

connecting observed phenomena changes in the archaeological records with the physical framework within restricted spaces. But with few exceptions the analysis of space was successfully developed as an approach to understanding continental wide phenomena and processes represented in the archaeological record (Trigger 2006: 418-478).

This shortcoming also has to do with the disappearance of the grand narratives related to the idea of progress (Revel 1999: 239-245). That 'helped' to refocus on the local and the particular rather than on a larger picture that could no longer be easily understood or even perceived in coherent ways. Hence post-processual archaeology was not conducive to any attempt to break away from the particularistic narratives that seldom reach beyond the local, the regional or the national.

In my view archaeology is in its origin a distinctly European way of introspection, closely linked to modernity. It has served the purpose of nation building, but also the construction of a European self-understanding as a continent with a *mission civilisatrice* in relation to the wider world (Díaz-Andreu 2007; Schnapp 1993: 275-315; Thomas 2004).

And yet today when European archaeology is still mostly contained within the institutional frameworks of nation states the discipline has hardly contributed to a post-colonial deep time perspective on what constitutes Europe as a specific place in the way it interacts internally and externally with the wider world. Archaeology remains a discipline dominated by provincial perspectives.

Time, space and place

Archaeology is about the ordering and understanding of human cultures in time and space.

These two dimensions also provide the obvious backbone of the explanatory framework archaeology has offered to account for cultural change, with the twin approaches of evolutionism and diffusion-migration giving primacy to time and space respectively as the framework for explanation.

Archaeology has seen the pendulum swing several times between the two. During the last decades, however, we have seen a general 'spatial turn' within the human sciences (Bachmann-Medick 2006: 284-317).

With the dismissal of the Soviet Empire, the collapse of the bipolar world order and the rise of new global and regional players on the international scene we have witnessed an increased complexity in the dynamics between different interests and actors. One way of trying to grasp what is happening now in world politics is to look back into time for patterns that might resemble those that we see today. In this search for historic learning we have seen among other things the application of International Relations Theory to the analysis of the rise of the Roman Empire in the context of the collapse of international order in the eastern Mediterranean in the third century BC. In general there has been a strong focus on Rome as an empire that both in its rise and its fall could provide important clues especially to different 'readings' of The United States (see Paludan-Müller 2012 for a brief survey). Equally a marked increase in the study of the history of the Chinese Empire(s) has become a vital element in the analyses of China's potential and positioning in the world of today (for instance, Chang 2007, vols. 1-2).

Geopolitics

No less spectacular has been the resurgence of Geopolitics as a discipline with a strong potential to inform decision makers in international politics. This discipline spans a broad perspective that includes what archaeologists would call culture history (in itself a wide field) alongside a strong focus on what Marxists would call the material basis, within a spatial or geographical framework (Chauprade 2007: 17-18).

In its scope and approach Geopolitics will in many ways seem familiar to archaeologists. With its spatial way of organizing its subject there is good reason for archaeologists to look more deeply into what geopolitics could have to offer in the sense of a widened spatial perspective, reaching well beyond the local and regional studies currently dominating most advances within archaeological analysis.

In the following we shall therefore consider an overview of geopolitics, its origin and some main developments.

What are the potentials of a particular geographical entity, and under which circumstances (technologically, economically, socially, culturally etc.) have those potentials been or can they be realized? These are basic questions that archaeology is used to answering, for instance when analysing a Neolithic or Bronze Age village in its surrounding landscape. In geopolitics the scale can increase to encompass entire nations and continents or indeed a global system. But geopolitics also extends beyond the material dimensions and includes the cultural system at large. Thus to put it simply and archaeologically, Geopolitics is a kind of enhanced «site-catchment analysis» on a global scale aiming at understanding how politics with their entire cultural and socio-political 'software' relate to space and territory.

Geopolitics originated during a period of fierce territorial competition between the great powers, where archaeology and anthropology also played their parts (Trümpler 2008).

The Berlin Conference 1884-85 aimed at regulating that competition for overseas territories, but without achieving results

that could dismantle the deeper tensions building up during a very volatile period that saw the decline or even demise of empires such as China, the Ottoman Empire and (later) Russia, and the rise of new powers with imperial aspirations such as Germany, Japan and the United States. This came as part of a 'parcel' that also contained a marked acceleration of globalization and industrial innovation (Doyle 1986: 242-256 and 344-49; Osterhammel 2009: 565-672; Chailland & Rageau 2010: 125-134).

In this context there was a strong need for analytical tools that could help political decision makers better understand the rules and options in the game they were playing for control over territories and vital access routes between them.

Halford J. Mackinder's Heartland Theory of 1904, (Ó Tuathail et al. 2006:34-38) marks an important turning point for a global geopolitical understanding on how the shape and articulation of landmasses restrict or facilitate various types of human activity and development.

Halford Mackinder (1861-1947) was a British admiral and an Oxford geographer whose main contribution (1904) is expressed in his Mercator-projection that defines the world in terms of three zones: Heart Land/Pivot Area, Inner Marginal Crescent, and Outer or Insular Crescent. Mackinder's work belongs to the school of *Realpolitik*.

A central element in the Heartland Theory was that whoever controls the central Eurasian continent holds the potential to control the rest of the world (Mackinder 2006 [1904]). Whether the theory is accepted or not, its strong focus on control over the Heartland is well in accordance with the dramatic competition, dubbed 'The Great Game' between Russia and Britain in particular for control over the inner territories to the north and west of British India, including Afghanistan and Iran (Chauprade 2007: 52 and Osterhammel 2010).

By around the year 1900, the British Empire, from the perspective of which Mackinder developed his thinking, had reached its zenith, economically already surpassed by its former colony, now the United States, and on the European continent seriously challenged by the upcoming German Empire and in an intense contest with the massive continental empire of Russia for the control of access routes to the Indian subcontinent.

In the rising German Empire geopolitical thinking was first developed by Friedrich Ratzel (1862-90). He was a German Geographer occupied with the scientific understanding of the geographical dimensions of politics. His engagement was inspired by Bismarckian aspirations, and by the later and more radical Wilhemian striving for a dominant position in Europe and in the world, and by Darwinism. He coined the term *Lebensraum* (1897) to designate the space necessary for the survival of an organism or a state (Chauprade 2007).

Karl Haushofer (1869-46) was a German officer and geographer. As a student he was inspired by his professor, Friedrich Ratzel. But he took a more radical stance in the analyses of Germany's geopolitical position, which he saw as threatened by lack of room for expansion. He saw Germany, alongside the USA, Japan and Russia, as destined to dominate each of (Chauprade 2007: 39) their zones of the globe. Haushofer has been accused of having inspired Hitler's *Grossdeutsche* geopolitical project, also because of his links with Rudolf Hess, who was one of his students (Chauprade 2007: 39).



Fig. 1 Halford J. Mackinder's Heartland theory of 1904, marks an important turning point for a global geopolitical understanding on how the shape, size and articulation of landmasses restrict or facilitate certain types of human activity and development. The Heartland theory itself emphasizes the pivotal role of the centre of gravity of the Eurasian landmasses. After Mackinder 2006 [1904].

Geopolitical thinking began equally early on both sides of the Atlantic. Alfred Thayer Mahan (1840-1914) was an American admiral. In 1897 he published 'The interest of America in Sea Power'. He outlined a grand strategy for the achievement of global U.S. naval supremacy following the example of Great Britain. Mahan rejected Mackinder's emphasis on direct control over the 'Heartland' and instead he focused on a network of harbours, naval bases and points of solid control with major sea routes. Mahan's ideas clearly contributed to the actual strategy followed by the United States (Chauprade 2007: 43-46).

Nicholas John Spykman (1893-1943) was an American journalist who became a very influential cold war strategist. He was critical towards the approach of Haushofer, which he regarded as too deterministic (Chauprade 2007: 50-52). He also distanced himself from Mackinder's emphasis on the central role of the Heartland/Pivot Area. For Spykman the most important zone is Mackinder's 'Rimland', of the Eurasian continent. This is where the confrontation of the major players takes place. Spykman's ideas are mirrored in the actual policy of containment pursued by the United States against the Soviet 'Heartland Empire' during the Cold War (Chauprade 2007: 52).

In France Jacques Ancel (1879-1943) became an influential geographer and geopolitician. He was particularly occupied with the role of borders and the formation of nations, and a specialist on the Balkans. In his writings he criticizes the German, Ratzel-Hauschofer, for his approach to geopolitics which was in his view too physically deterministic and too ideologically obsessed with pangermanism (Chauprade 2007: 71-73). Instead of physical determinants Ancel stresses the role of cultural similarities and

differences as the crucial factors that decide which role is ascribed to physical barriers or links (Chauprade 2007: 72).

In general French approaches to geopolitics can best seen as characterized by diversity theoretical and ideological diversity and with a strong emphasis on the interplay of a variety of different factors in the interrelationship between politics and space through history.

Yves Lacoste (1929-) is another French geopolitician. He is closely linked with the anti-colonial movement and a strong critique of the German *Geopolitik* for its services to the imperial projects of Germany. For Lacoste culture and identity are understood as important factors in the shaping of history, though basically he regards them as false representations (Lacoste 2009: 33-34). Lacoste has published important analyses that relate current conflicts to the geography of the theatre in which they are played out (Lacoste 2009: 14). For instance he has exposed how water plays a crucial role in the Israeli settlement strategy for the occupied territories of the West Bank (Lacoste 2009:312-18; compare Chauprade 2007: 670-90).

Aymeric Chauprade (1969-) is a controversial French geopolitician with a strong souverainist engagement for the nation against any imperial projects. Chauprade's approach is deeply rooted in the long history and in this sense inspired by the *longue durée* approach of the Annales School (F. Braudel), but also by the Neorealist School within International Relations theory (see later). Chauprade rejects the position of Lacoste on culture as superficial. Chauprade's textbook 'Geopolitique, constantes et changements dans l'histoire' (2007) is used in the education of French officers

at military academy. Chauprade is particularly interesting from a cultural historic point of view because of his strong emphasis on what he sees as deeply culturally rooted patterns of conflict and of cooperation, and because of his many (thought) provoking observations, that link geography to culture and history. In his latest book Chauprade has, in a more popular form, presented a dramatic perspective on the current reshuffling of global balances in which cultural systems in a clash of civilizations perspective have come to play an even greater role than in his earlier writings. (For further surveys of and introductions to geopolitics see e.g. Chauprade 2007; Ó Tuathail et al. 2006; Lasserre & Gonon 2009).

International Relations Theory

If we look beyond the proper geopolitical field and into the related international relations theory there are some interesting examples of historical analyses of major shifts through time. IR-theory studies the development of international relations from a theoretical perspective offering various approaches or 'schools' of which the realist school is the most influential (Linklater & Suganami 2006: 81-116). It is also the one with the longest tradition of having Thucydides' (c. 460 BC – c. 395 BC) analysis of the Peloponnesian war being recognized as its seminal work. Thomas Hobbes' (1588 – 1679) *Leviathan* is another important work that has been read into the realist tradition.

Kenneth Neal Waltz (1924 -) is professor of Political Science (Berkeley). He is founder of the neo-realist school, aiming at developing a more stringent set of analytical tools. In Waltz' view the international relations are determined on three levels: one at the individual-psychological level of the acting leaders; another determined at the unit level by the political system of government in the individual states; and finally a third and more important one determined at the (international) system level (Chauprade 2007: 54-56). Waltz has used this approach to analyse the relations between Athens and Sparta, following up on Thucydides.

According to the neorealist approach there are four basic axioms that must guide the understanding of the dynamics in international relations:

- The state is the single most important unit in international politics
- Anarchy dominates the international system. It is so to speak its default *modus operandi* and there is no lasting supranational authority.
- Survival therefore becomes the basic priority of any state.
- Self-reliance becomes the only truly lasting remedy, since treaties and alliances will be broken by any other part that no longer sees its interest served by remaining loyal.

Also from a neorealist perspective, Arthur Eckstein (1946 -) has analysed the rise of Rome as a response to the menace from anarchical conditions spinning out of control in the eastern Mediterranean during the third millennium BC (Eckstein 2006). Eckstein follows the development of a generalized culture of warfare, particularly within and between the Greek and later the Hellenistic states. Eckstein sees a cultural disadvantage on the side of those states compared to the Roman state that was able to combine a matching level of military resolve capacity with superior skills in diplomacy and alliance building.

The neorealist approach, though stemming from a different tradition, represents a line of thought that is related to geopolitical thinking in its clinical analysis of the potentials and performances

of politics in their quest for survival. There is a great deal of neorealist inspiration in the thinking Aymeric Chauprade – not least in the central role ascribed to the state.

The secret of the Occident – explaining European scientific success in scientific terms

David Cosandey (1965 -) is a Suisse physicist who has asked the same question as many others: why and how did Europe achieve and hold a globally dominant position for half a millennium? (Cosandey 1997) Cosandey's question came out of his reflection as a physicist upon what had made European science and technology dominant. Cosandey does not pretend to be the first to point to the physical layout of the continents, and in particular how maritime access has been an important factor in helping Europe achieve its global position of dominance at a certain moment in history. Cunliffe has recently pointed to the same specific properties of the continent as the backdrop of his overview of European prehistory and early history (Cunliffe 2008). But Cosandey has brought the systematic virtues of natural science to bear upon his subject. By measuring through the application of a diversity of methods the ratio between land mass and coastlines, and the orientation of mountain ridges and rivers he has been able to substantiate his thesis of European uniqueness (Cosandey 1997: 499-587). This uniqueness comes in the form of a layout of the Western European part of the Eurasian continent that defines well-sized potential territories with boundaries that make them easy to defend at the same time as allowing interaction between them by sea and by rivers. Cosandey argues that this was the same logic that at a certain moment in history made it possible for the rise of the Greek system of fiercely competitive city states, none of which were able to establish themselves as the hegemon, dominating all the rest (Cosandey 1997: 583-654). The Aegean geography, including the mainland with its many peninsulas and mountain ridges, offered the same type of fragmented and yet interconnected spaces that later on a larger scale should allow the rise of a competitive territorial state system in Western Europe. For Cosandey it is the ongoing competition between states for supremacy that has driven the economic, scientific and technological development which, for a period of 4-500 years during the first millennium BC, put the Greek city states in the lead in the Mediterranean space, and for a period of 500 to 600 years during the second millennium AD made the Western European states lead in the Global space.

An important quality of Cosandey's model is that it refuses both environmental, cultural and racial determinism. The essence of his argument is that under certain historic circumstances a certain type of physical environment may offer the right framework for a very dynamic development. But with the development of ever more powerful technologies for communication, transportation and destruction (military) the boundaries for interaction and domination will eventually be redefined. For instance, this is why , high intensity warfare is no longer a relevant way of competition between states within the limits of Western and Central Europe (Cosandey 1997: 667-669) . During the twentieth century the military technology has reached a scale of destructive capacity that makes the prospect of a full scale war in Europe meaningless as a means of domination for any power with ambitions to survive. Thus in Europe after the twentieth century it makes sense to experiment with empire in the form of a political union as a way of regulating the relations between what used to be sovereign nation states in fierce competition.

Interestingly, Cosandey sees the Roman Empire as an historic anomaly (Cosandey 1997: 640) in the Euro-Mediterranean

geography, whereas empire is a logical form of political organization at a certain level in territories characterized by huge contingent landmasses with insufficient access to navigable seas and rivers. Russia and, to a lesser degree, China are examples of empires that seem more in accordance with their physical environment of vast unbounded landmasses, where fewer natural borders offer themselves for protection against other polities. In Cosandey's understanding of empire as a hegemon unchallenged by any competitor, its great disadvantage is that its main focus will be on upholding the existing order within its borders. It needs neither to stimulate nor allow innovative (and potentially subversive) thinking in order to gain a technological and economic advantage against competitors. Hence once established, according to Cosandey, empires tend to become conservative and stagnant. But that requires that we accept the definition of empire as a politico-territorial state that has no rivals within the physical space it depends on (Paludan-Müller 2012). Another definition would see empire as a sovereign state that dominates or absorbs all other polities within its cultural space (Paludan-Müller 2012). China today would probably qualify as an empire according to the second, but not to the first, definition. But in the past there have been periods where China has qualified as empire according to both definitions.

Conclusion

If we as archaeologists want to deal with major themes that are on people's minds in our own time, the questions concerning history's great epochal watersheds, where orders and balances have shifted on a continental or even global scale, must have a central position.

To these shifts belong the neolithic-, the industrial- and the recent information revolution, the rise of urban communities, the origins of states and empires as phenomena and their collapse as individual formations. Of particular interest in that context are the great shifts, where entire technological and / or cultural, ideological and political systems have been supplanted by others, as it happened with the fall of the Western Roman Empire, or with Islam's rapid expansion over the southern shores of the Mediterranean, the Spanish conquest of Mexico or the Ottoman expansion and takeover of the Byzantine Empire. The latter offers an important possibility to also look into continuities between two seemingly different systems.

Our contemporary world is now going through one of those seminal periods where balances are shifting on a lot of fields at the same time, technologically, economically, socially, demographically, ideologically and politically. On top of this comes an unpredictable process of climate change.

We can hardly grasp the reach of these shifts, nor can we imagine where they will take us. So evidently we are inclined to look back into earlier periods of turbulence and transformation for answers from whatever perspective we have. In the West we tend to look into historic periods of decline such as the end of the Roman Empire – asking whether we ourselves are in a decline, or just in transition (Indyk et al. 2012; James 2006; Kaplan 2010; Khanna 2008; Paludan-Müller 2012). In the Arab and Muslim world the brief golden age of the early caliphates has attracted attention among those who are frustrated with corrupted encounters with modernity (Chauprade 2007: 344; Phillips 2011:272-279). In China there is a strong awareness of the Chinese Empire and its history of alternating unity and fragmentation (Chang 2007, vol. 1: 45-74; Scheidel 2009).

Archaeology with its special capacity for reading the material evidence has a unique potential to extend the reach of our understanding of great shifts into the remote past – albeit at a different level of resolution – where written sources are scarce or even absent. Archaeology can also greatly enhance our understanding of great shifts further up in history, where written records speak little about the lives of vast segments of the global population.

But archaeology needs, as always, to work alongside other disciplines. Geopolitics and International Relations theory alongside other approaches to history unfolding over vast spaces and long time spans are rich sources that can provide us with a better understanding of the great historic processes of our own time and at the same time provide us with analytical tools for working with the distant past.

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THEORIA EST ANCILLA RATIONIS POLITICAE?

THE NEOLITHIC REVOLUTION IN THE ARCHAEOLOGICAL RESEARCH OF SOCIALIST HUNGARY

Eszter Bánffy

Abstract: This brief study focuses on the theory of the Neolithic revolution from the perspective of 'socialist' research history, as well as on the shift in its interpretation after the political changes in Hungary and East Central Europe. The theory of the rapid adoption of a sedentary lifestyle and of food production, regarded not only as a revolutionary - but also as an evolutionary - step, seems to have correlated well with basic tenets of socialist propaganda on Man's glorious conquest of Nature, and with narratives on the progress from primitive towards technological advancement. The parallels between prehistoric research and the political tenets of socialism, illustrated by a few examples, raises the question of whether prehistorians writing on the transition to the Neolithic had deliberately bowed to the ruling ideology, or whether this was part of the Zeitgeist, i.e. of a broader trend in time and space, implying that the proponents of revolutionary change genuinely believed in what they wrote. Knowing that the idea of the Neolithic revolution was deconstructed like several other processual ideas, and came under heavy postmodern (and sometimes nationalistic) critique, the answer is influenced by the growing awareness that perceptions of prehistory are shaped by our own era and cognition.

Keywords: Neolithic transition, prehistoric research in socialist countries: 1945-1989

*To Kristian,
In tribute to his vision of, and his work in, the creation of the
European Association of Archaeologists*

Today, the Mesolithic in Central Europe is increasingly seen as the era of a rather complex society. This realisation is based on recent research results indicating that Mesolithic communities were adept at adapting to postglacial environmental conditions, that they controlled and probably maximised the size of families, and had a daily labour time of no more than a few hours (Rozoy 1996). Their mobile lifestyle ensured protection against a series of later illnesses that were still unknown; they had a fairly healthy diet and, thus, a somewhat longer life expectancy, as seen in the graves where skeletons have strong and robust bones (Roksandić 2000: 78-81). These features contrast sharply with certain changes appearing after the shift to a sedentary lifestyle and early farming in Central Europe: uncontrolled childbirth, increased daily work-load, a poorer and less varied diet, and the appearance of epidemics such as tuberculosis (Cohen 2002: 44-45).

It comes as little surprise, then, that recent studies on the Neolithic transition in western Hungary, a roughly 120-year-long period, have identified the sites of a population hesitant about, and not wholly committed to, the transition in the mid-sixth millennium cal BC (Bánffy 2000, 2004: 355-394; Bánffy & Oross 2009; Oross & Bánffy 2009)(Fig. 1). These groups, made up of both local foragers and immigrant Balkan farmers, formed the backbone of the formative phase of the Central European Linear Pottery culture (hereafter: LBK) (Fig. 2). Culturally and genetically interwoven, they settled on soils unsuited to large-scale agriculture, cultivating instead domesticates in small gardens around the house. It would appear that they were undecided on whether to make a full living from agriculture, or rather return to a more mobile lifestyle, subsisting on hunting, fishing and gathering. In this transitional phase, the plants previously tended as part of Late Mesolithic garden cultivation were most probably grown in small

Early Neolithic fields and were only complemented with cereals (Gronenborn 1999; Jeunesse 2003; Gehlen & Schön 2003). Domestic animals, such as sheep, goat and cattle, were brought to this region from the northern Balkans (Halstead 1996), enabling the diet to be enriched without a break in overall subsistence patterns (Willis-Bennett 1994: 327). The initial Neolithic phase can thus be conceptualised as a slow transformation rather than a sweeping, or even 'revolutionary' change.

This interpretation of the new evidence remains in striking contrast to the traditional, twentieth-century perception of the Neolithic revolution. Prior to the last twenty years, Mesolithic settlements were simply not searched for – or found – in either eastern Hungary or Transdanubia, and thus some prehistorians believed that the first farmers arrived to an empty, depopulated land (Gábori 1981). In the research of the later twentieth century, a dense Mesolithic settlement pattern was still not detected, at least not until the last decade. This situation helped in maintaining the assumption that the spread of the sedentary, food-producing lifestyle happened without any participation of a Mesolithic population.

In his book *Man Makes Himself*, Vere Gordon Childe saw the process as a 'revolution that transformed human economy and gave man control over his own food supply' (Childe 1951). Childe, a Marxist thinker (Trigger 1987: 6-7; 1989: 259-263), equated true knowledge mainly with technological advances, and offered a fresh perspective on the Neolithic transition, at the time ultimately regarded by prehistorians the world over as progress in economic strategies spread by colonisation (e.g. Sugiura 1987: 44-46; Harris 2002: 31-33; Chapman 2009). Diffusionism remained virtually unchallenged before the 1970s (Anthony 1997: 22) and had a

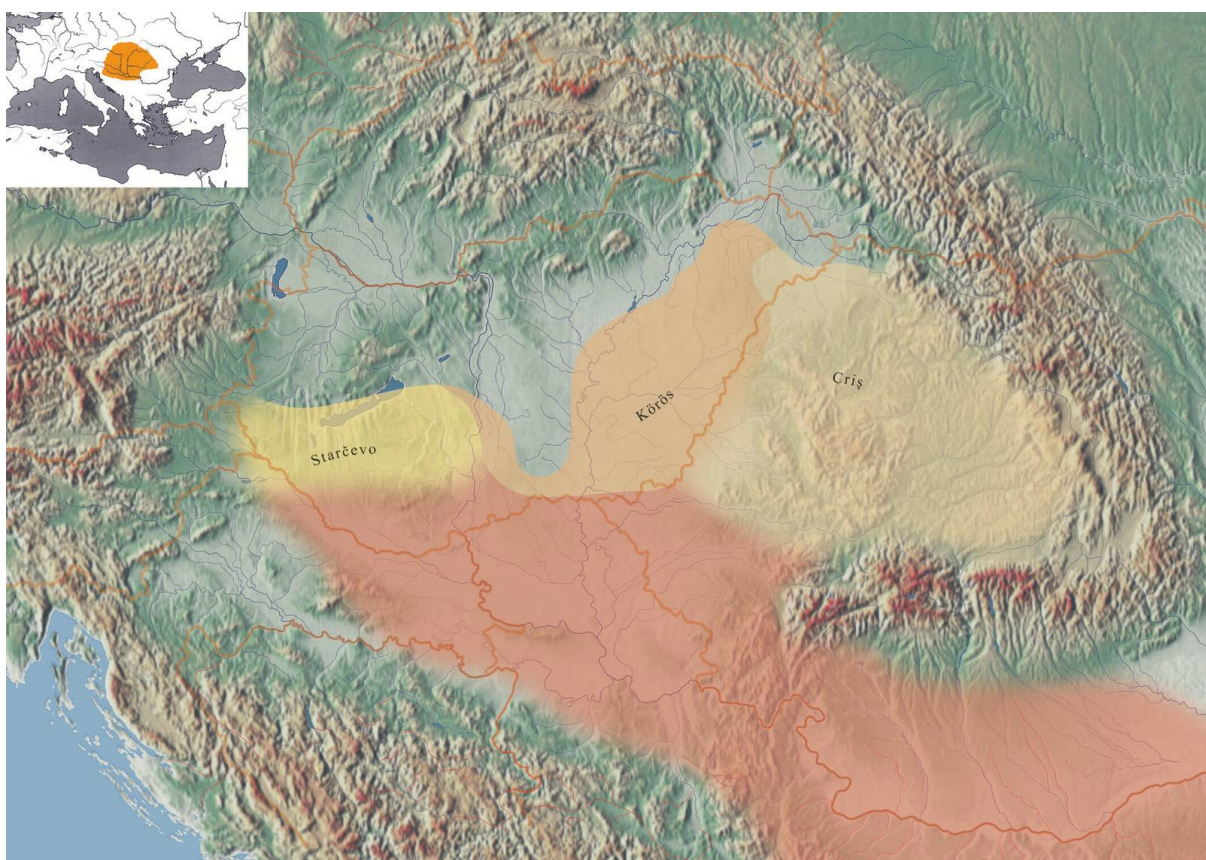


Fig. 1 The Carpathian Basin in the early sixth millennium cal BC (graphics: Viktor Szinyei)

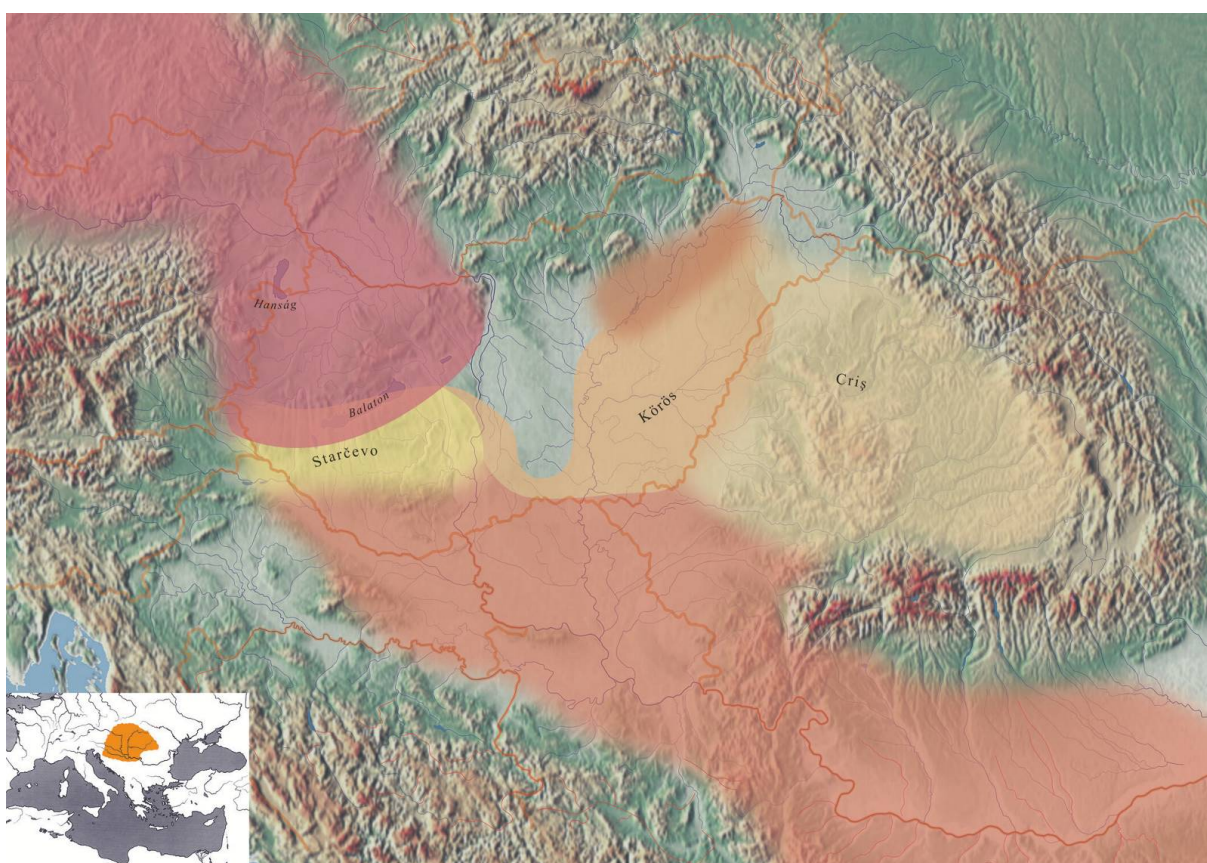


Fig. 2 The Carpathian Basin at the mid sixth millennium cal BC (graphics: Viktor Szinyei)

profound impact on theoreticians of both the cultural historical and, later, the cultural ecological perspectives (e.g. Flannery 1965; Binford 1971; Harris 1977; Ammermann 2003).

For Soviet archaeologists, the idea of the spread of agriculture was principally seen as evolutionary in the Darwinian sense (Trigger 1989: 207–243), whilst it was revolutionary regarding its vision of being a rapid, singular event, which had an irreversible impact on the entire later course of (pre)history. In this sense, the *spiritus rector* was man in action, set in the focus of the neolithisation process: even when stressing the introduction of food production as a new ecosystem, Marxist archaeologists saw the Neolithic revolution as a *gloire* of human creativity (Dolukhanov 1979: 200; 1986). This idea became widely accepted, even though, controversially, Soviet archaeology linked the appearance of the Neolithic on Soviet territory with the start of pottery production rather than with farming (Jordan & Zvelebil 2009: 35). However, this is understandable to some extent, considering two facts. The first is that in the Russian and Baltic forested areas agriculture, as is well known today, was by no means a breakthrough in subsistence strategies: the transition to farming was a very slow process, lasting for many centuries (Zvelebil et al. 1998). The second pertains to the fact that Soviet prehistorians, like those in Central European schools of archaeology, received a traditional German-Prussian descriptive training in the typology and typochronology of objects at Russian universities (Bulkin et al. 1982). These views, mostly concerned with the neolithisation of the North European forested area, had hardly any impact on the interpretation of the Neolithic of the Carpathian Basin, where a completely different scenario accounts for the spread of farming.

It must be borne in mind that the idea of man's conquest of Nature was one of the key concepts of the socialist world, a tenet taught from elementary school onwards as reflecting human development and evolution, which harmonised with the Marxist idea of progress from the primitive towards the more developed. This thought was closely allied to the practice of introducing arbitrary changes to natural biotopes and habitats, principally in order to gain more arable land for farming. One of the most representative examples of this practice was the forceful increase of irrigated area along the Central Asian Amu Darya River, which caused major human-induced changes in the flora and fauna along the Aral Sea, and eventually led to the salination and decrease of its extension (Pavlovskaya 2010).

Similar examples can be quoted from post-war socialist Hungary: the artificial drainage of marshland areas such as the western lakeshore area of Balaton and the Hanság in north-western Hungary was rooted in the same idea and was part of the same practice, and all resulted in major destructions of the environment without gaining much profit. Other voluntary efforts were aimed at introducing the cultivation of cotton, rice, orange and lemon to Hungary in order to ensure the country's independent economy (i.e. independent mainly from capitalist economies) (Fig. 3). The apparent failure to acclimatise these plants to Central European conditions did not discourage politicians of the 1950s when ideological conformism and propaganda were more important than profit (Hajdú 2006). 'Following the Soviet example, Socialist man reorganises nature', was the maxim of Ernő Gerő, one of the leading ideologues of the Rákosi regime in the 1950s (Gerő 1950). These experiments always conformed to the Soviet practice because they essentially copied its aims and methods.

None of the archaeological or other '-isms' emerging in the Anglo-Saxon world penetrated the Iron Curtain, and thus the western

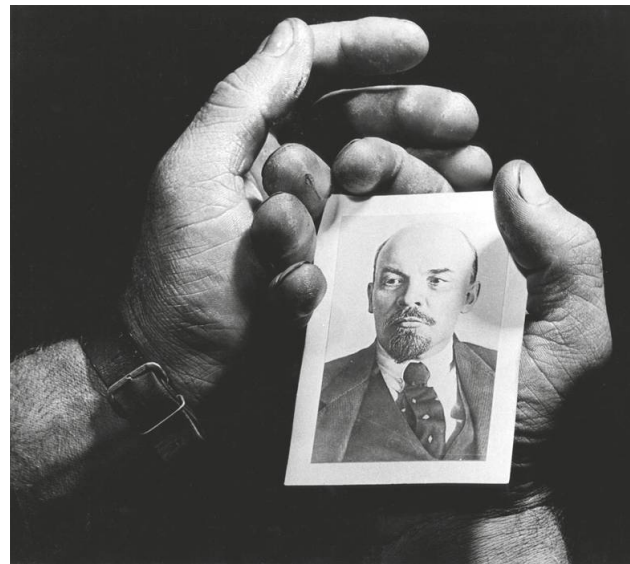


Fig. 3 Emotional pressure on farmers, as shown in a photo from the 1950s, south-west Transdanubia (author's collection)

European and American neo-Marxist trajectories remained practically unknown in socialist Eastern Europe. However, Marxism of the Soviet type was imposed on archaeological interpretation, and remained practically unchallenged until the political changes in 1989 (Kohl & Fawcett 1995). Sometimes, as pointed out by L. Koryakova, it survived even longer (Koryakova 2002), although there were some exceptions among the Central European countries (such as Eastern Germany and Poland) (Veit 2002: 411). I would assign Hungary to the latter group of countries. Remarkably enough, the forceful imposition of socialist ideology ceased after the 1956 revolution. Like Hungary, post-war socialist countries followed the Soviet discourse in most disciplines, including archaeological studies, to a minor extent, on a limited scale only, during the last three decades before the fall of the wall, which meant a relative freedom for authors. Even if it occurred, the socialist ideas were more apparent in the research of later prehistoric and historical periods such as the joint Soviet-Hungarian projects focusing on the Hungarian Conquest period in the tenth century AD (e.g. Erdélyi & Simonova 1985), as well as a few works offering a broader overview of a particular period (e.g. Titov & Erdélyi 1980). Although Soviet archaeologists participated in a few prehistoric excavations such as the investigations at the Late Neolithic tell settlement of Herpály (Kalicz & Raczky 1984), Soviet-Hungarian projects never ended in joint publications; moreover, the excavators have no recollections of their Soviet colleagues' views as influencing Neolithic research in Hungary. Aside from a few sporadic cases perhaps, prehistoric archaeological research was not forced to follow or express propaganda of the Soviet type in its publications.

Still, hypotheses about the neolithisation process and the emergence of Neolithic cultures itself were interwoven with ideologies of socialism. In contrast to the perception of neolithisation as bolstering ethnic origins, as in the case of the LBK farmers identified with an early Germanic population (Kossinna 1919; Arnold 1990), in this case, the key issue blatantly served to reinforce the pride of modern (socialist) man, who conquers conservatism and nature, and strives to promote development. Viewed in this context, food production was by necessity regarded



Fig. 4 Endless crop fields envisioned as a result of the Neolithic Revolution (graphics: Viktor Szinyei)

as being superior to mobile hunting and gathering. It must also be noted that until some twenty years ago, evidence for local foragers was scarce in Hungary. This assumed vacuum, already mentioned above, was yet another reason to visualise the first farmers as pioneers advancing into a no man's land, who broke the virgin grasslands and cleared tracts of forest in order to replace the former stagnation and backwardness with progress and glory (Gábori 1981, 1984; Simán 1990; Makkay 1982). The traditional view of linear evolution was filled with a new, socialist content (Figs. 4-5).

A number of additional elements can be traced to a similar basis. Archaeological narratives on the 'domestication fever', as practiced, for example, by the occupants of the Herpály tell settlement, remained dominant for many decades. This idea was introduced by Sándor Bökönyi, the founding father of Hungarian zooarchaeology. In his comprehensive study (Bökönyi 1974: 21–30), he emphasised the revolutionary intensity of animal domestication and animal keeping in the Neolithic of the Carpathian Basin, arguing that the record of local cattle domestication reflected the increasing importance of this species (Bökönyi 1984). Conforming to the state of research in the 1970s and 1980s, Bökönyi believed that sheep and goats were the only species brought to Central Europe in a domesticated form, while cattle were domesticated locally, from the wild aurochs stock of the Carpathian Basin. He envisioned 'professional' centres of domestication such as the one at Herpály, where he was able to distinguish transitional morphological forms (Bökönyi 1989.) This theory was later challenged on the basis of both bone morphology and the logic of its implications (Bogucki 1989; Rowley-Conwy 2003). Similar to large-scale intentional domestication, the so-called secondary exploitation of animals, i.e. the beginnings of

milk production (Sherratt 1983: 90), as well as the exploitation of animals for their wool and draught power (Bökönyi 1974: 217) was interpreted as another 'revolutionary' step, marking the onset of a 'domestication fever' in the second half of the Neolithic when prehistoric communities were intent on increasing the number of domesticates by any means (Bökönyi 1987: 165). We now know that milk production already existed in the Early Neolithic (Craig et al. 2005). Although morphological changes on the bones can only be identified in later periods (Bartosiewicz 2006), this does not in itself preclude the occasional exploitation of cattle for traction already in the sixth millennium BC. The discovery of an Early Neolithic bovine figure with a transversally pierced nose (Bánffy 2002) has pushed back the probable date of the exploitation of Early Neolithic domestic cattle for draught purposes (Bánffy 2004: 276–284), placing it some five centuries earlier than proposed by Bökönyi.

Yet another key issue in studies focusing on Neolithic cultural development was the assumed superiority of tell sites over 'simple' horizontal settlements, this being one of the reasons that research in the later twentieth century was concentrated on the eastern Hungarian plain, where tell sites emerged on the terminal LBK substratum and flourished for some five hundred years, until the mid-fifth millennium cal BC. These tell sites can be regarded as the hallmarks of an extensive culture province, namely the South-East European Neolithic, while the Great Hungarian Plain (Alföld) marks the northern and north-western frontiers of this zone. János Makkay, one of the prominent archaeologists of the 1970s and 1980s, devoted a book to the question of when, to what extent and how long the Neolithic cultures of Hungary were part of this primary geographical and cultural zone (Makkay 1982). In his view, the tell sites can be identified with administrative and



Fig. 5 Small gardens around settlements and stream banks envisioned when identifying the transitional phase to farming (formative PBK phase) (graphics: Viktor Szinyei)

economic centres, resembling to some extent the pre-urban tell sites of the Ancient Near East. These sites may have controlled the smaller and temporary sites around them, similar to their counterparts in the core region during the Uruk-Warka period, which he regarded as ‘ideal’ tells (Makkay 1982: 104–111, 1991: 324). Current research, however, regards tells as considerably more complex phenomenon, arguing that their role as economic (and distributive) centres was merely one of their many functions, and that they were probably also social centres, the hubs of long distance networks, places of memory and the settings of community rituals (Chapman 1994; Raczky et al. 2002; Raczky et al. 2005; Bánffy 2007; Bánffy & Bognár-Kutzián. 2007). It is also noteworthy that the model of abruptly abandoned tells at the close of the Late Neolithic is gradually fading with the newly excavated and published tell sites with an upper layer dating from the Chalcolithic Tiszapolgár culture (Schier & Draşovean 2004; Parkinson et al. 2002, 2004). For Makkay, however, the decline of Late Neolithic Tisza-Herpály culture parallel to the gradual abandonment of tell settlements, was nothing else but the start of a general, long-term decline. It is worth quoting the closing words of his 1982 book:

‘The events of this period determined the history of the Carpathian Basin for a long time. In 1981, at the annual assembly of the Hungarian Academy of Sciences, someone noted that the economic problems of modern Hungary are the consequences of the mass accumulation of one thousand years’ backwardness. ... I would like to express my conviction that the periodical disruptions in the development of the Carpathian Basin did not start with the Hungarian Conquest. The development of the Tisza culture, doomed to fail, soon collapsed. The ensuing stagnation of several

millennia was only occasionally interrupted, and even then only by short, abrupt periods of more rapid development (as, for example, in the Middle Bronze Age and the Roman Age). The time for the definitive and final elimination of this accumulated backwardness has only arrived now.’ (Makkay 1982: 163–164).

A distinct optimism concerning Neolithic development can be perceived in these works. The question of whether these distinguished scholars tried to – consciously or subconsciously – conform to the ruling ideological standards of the socialist ideal is not without interest, even though there is no easy answer. Certainly, there is no sign whatsoever in the quoted works suggesting that they had been written under pressure. It must be borne in mind that most of the mainstream archaeologists who received their university degrees after the war came from poor peasant families from remote corners of Hungary, who would earlier have had few opportunities to study. It may well be that some, though not all, had regarded their own rising career as the manifestation of a higher ideology. In this sense, it is possible that the progressive interpretation of food production and sedentary society was part of the *Zeitgeist* of socialist Hungary.

We are all bound to the cognitive currents of our own era. The art forgers of the eighteenth century made brilliant fake antique sculptures that reveal much about the eighteenth-century interpretation of art and of the world in general (Szilágyi 1987). It is therefore quite understandable that socialist ideologies had an impact on East Central European Neolithic archaeology.

The new tendencies in the interpretation of the Neolithic in Hungary following the political changes seem to confirm

this assumption. One of the side-effects of the freedom in interpretation following the fall of the Berlin Wall is rather sad: in Hungary, the *laissez-faire* of scientific interpretation gave rise to a host of unscientific, often downright nationalistic and ultra-right wing concepts and beliefs as well, marking a trend in which archaeological finds and find complexes are often deliberately misinterpreted and (mis)used. To make things worse, in some cases this has been committed by formerly respected scholars.

Even researchers who attempt to adhere to merely excavating and interpreting data cannot sit back and relax, even though we can now work with far more reliable and well-grounded data from which there has emerged a broad picture of the complex, mosaic patterning of the Neolithic transition, with at least five major scenarios in Hungary (Bánffy 2006). Our current understanding of the formative LBK phase is now clearer, together with the perception that farming and a sedentary lifestyle had its disadvantages, too, and that there was some indecision as to whether local foragers would turn to farming or immigrant farmers would revert to foraging. Still, regardless of the extent to which prehistorians rely on archaeological data, there can be no doubt that these interpretations reflect deconstruction, the relativeness of major strands of archaeological narratives – all signs of postprocessual thinking. Thus, we cannot side-step the problem that even though Neolithic interpretation was and is based on genuine data in both the socialist and the post-socialist periods, only selected pieces of the evidence that could be fitted into a preconceived concept were and are still used. Since new interpretations of the Neolithic blend various ideas and definitions adopted from anthropology and other disciplines that are to some extent alien to purely archaeological methods, we must come to terms with the realisation that like our predecessors, we are also influenced by the contemporary Zeitgeist.

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VENEZUELA: REVOLUTION, HISTORY AND CULTURAL IDENTITY

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Abstract: The cultural policies of the Bolivarian Revolution are set to replace the individualistic and racist social values inherent in our old national culture, which were used by the former Venezuelan neo-colonial governments to model the lifestyle of our national society in line with the values of the American way of life. The social values promoted by the revolutionary cultural policies are social solidarity, cooperation and collective participation in communitarian self-government. Those values, expressed in daily life as forms of cultural resistance to overcome social injustices inherited from our former type of capitalist regime, will finally be essential to build the Venezuelan humanistic and democratic socialism.

Keywords: Social identity, cultural resistance, Bolivarian Revolution, the State, bourgeoisie, class struggle

Preface

This article is written with the highest regard for Professor Kristiansen and his work, which has been influential in our research. We have just finished a book: *From Capitalism to Socialism: perspectives from critical anthropology* (just printed by the Central Bank of Venezuela) which examines the origins of capitalism as a European civilizatory process whose roots may be recognized in the Early Bronze Age. A type of history of humanity is developed, exposing the way capitalism expanded through world society after the sixteenth century until the present day, when socialism emerged as its opposite. We used Kristian's book *Europe Before History* as a reference for the first part of the text.

Introduction

According to neoliberal ideology, the market is bound to replace all paradigms, while globalization is synonymous with social progress. The Latin American national cultures are regarded as impeding the inclusion of our countries into global society.

For Kaplan (1960: 72) the process of world capitalist domination through globalization will reduce cultural diversity, with it being only a matter of time before all world cultures become a single culture. Nevertheless, the history of capitalism refers to an unequal type of social development that, far from eliminating cultural and national particularisms, has relied upon them to create and reproduce them as permanent cultural forms. Following Samir Amin (1998: 190), at the present stage of capitalism all ethnicisms, religious fundamentalisms and all other beneficial processes of social particularization are stimulated by the system as a way to achieve the destruction of the State - while counteracting at the same time the capacity of the popular forces for resistance in the Third World. Nevertheless, sociopolitical events in the last decades in the region demonstrate the vitality of nationalisms and cultural particularisms, indicating that capitalist world hegemony will not be able to achieve peacefully the cultural extermination and domination of our countries because it struggles against semi-colonial formations built upon cultural singularities (Marmora 1986: 7; Britto García 1999: 25-26).

The actual decadence of US world hegemony plays against neocolonial policies of cultural homogenization advanced throughout the twentieth century by transnational corporations

on a global scale. While in Latin America the old type of national States have weakened because of globalization, cultural and ethnic particularities, formerly repressed and subsumed within the national cultures, they reappear stronger than before in the ALBA (Bolivarian Alliance for the Americas), UNASUR (Union of South American Nations) and CELAC (Community of South Americans and Caribbean States) multistate communities.

National State and the Venezuelan Culture

Culture is produced by social agents in their daily life praxis, created by social subjects within specific historical contexts (Vargas-Arenas & Sanoja 2006: 99-100; Sanoja & Vargas-Arenas 2008: 168; Sanoja & Vargas-Arenas 2011:563-565). Culture, as a social strategy, articulates the experience of daily life, giving signification to its concrete material conditions, additionally becoming a factor of subjective identification (Kristiansen 1998: 71). In our case, culture is also expressed through the material singular transformation that led Venezuela from the Colonial Period (sixteenth to nineteenth centuries) to the modern National State, born in 1811.

The explanations of national history provided by official historians were not constructed solely for consumption by elites but also to provide the ideological foundation for pedagogical programmes that perpetuate deformed perceptions inculcated to children since primary school about themselves, their culture, their national identity and their nation (Vargas-Arenas 1995:55). This approach was fundamental in reinforcing the feeble Venezuelan bourgeoisie that existed at the beginning of the twentieth century, when the earliest foreign oil companies drastically fractured the old colonial way of life that sustained its political power (Quintero 1968). The official historiography claimed that our national formation had been forged by the hybridization of aboriginal and African cultures with the one brought about by the colonial expansion of capitalism, Europeans and their descendants later becoming the rulers of the State. For the imperial metropolis and later for the republican oligarchy, hybridization (*mestizaje*) became a colonial cultural project to conquer the aboriginal population and socially control the colonial as well as the republican society (Cunill Grau 1997).

Techniques for social domination denied aboriginal and enslaved populations cultural and social rights, with minimal social spaces

to help build strong civil society in the future. Until 1998 the dominated social sectors were never able to take actions oriented to fulfil their own hopes and goals. This is perhaps one of the reasons why during the nineteenth and the twentieth centuries, histories of Venezuelan population depicted a feebly structured civil society (Lander 1995).

The colonial European expansion of the sixteenth century allowed the continued exploitation of resources existing in Latin America, aiding the emergence of national States in Europe and imposing capitalists ways of life in both societies (Dirk 1992: 3) based on a cultural order whose significations and new ideological conceptions strived to control the life of individuals creating a historical memory legitimating the colonial order.

The colonial political discourse created social traditions set to naturalize and legitimate the class system as well as the cultural codes characterizing each social class. Colonial conditions in Venezuela generated a society more complex than the pre-Columbian, resting on deep social and economic inequalities expressed as cultural codes. This happened because culture is not neutral but composed by symbolic codes that acquire political significations in respect of class content (Bate 1984; Kristiansen 1998: 71).

From the sixteenth century onward, social classes diverged culturally, socially, economically and technologically, fracturing colonial society and leading to emancipation from Spain. Later, republican society continued equally fractured, leading to the present Bolivarian Revolution.

In colonial times, the Venezuelan population was numerically reduced compared to its territorial expansion. Since non-urban communities enjoyed few wider contacts, local cultural identities grew very strong while urban areas retained social and economic communication among themselves (Lombardi 1976: 56-65)

The annual *per capita* consumption as seen from the demographic pyramid of the cities of Caracas and Cumana, showed that in 1794 1% of the *mantuana* population (the colonial nobility) earned 102 *pesos* and 3/4 *reales*; 29% of the population of poor whites mulattos and mestizos in general earned 57 *pesos* and 5 1/2 *reales*; the poorest social classes, 71% of the entire population composed of the poorest people (mainly mulattoes, zambos, indians, free negroes and negro slaves) earned 39 *pesos*, 5 or 6 *reales* (McKinley 1993: 40-42). Since the eighteenth century two great cultural systems identified the dominant block and the dominated block, each one fractured into multiple regional and local cultures.

The colonial way of life did not disappear in the nineteenth century, but continued functioning as the cultural matrix of the harsher neocolonial republican system of social control by which the minority of rich people dominated, excluded and practically enslaved the 80% of Venezuelan population between 1830 and 1998, when the Bolivarian Revolution began. Within this historical period the national Venezuelan State was born. A similar situation also developed in the rest of the Latin-American republics (Porto Goncalvez 2003: 266; Sanoja 2006: 63-65; Basadre 2009: 543-545).

The Geoeconomy and the National State

The colonial process amalgamated in a new social body a great diversity of cultures and societies possessing differential levels of historical developments: nomadic hunters and gatherers, tribal

sedentary egalitarian societies and hierarchical or state societies (Vargas 1990; 1998a; Vargas & Sanoja 1993; 1995; 1999a; 1999b; Sanoja 2008). Far from creating cultural homogenization, the Spanish colonial system brought about a diversity of cultural particularities in every region (Sanoja 2006: 75).

The Latin American National States boundaries coincided - in a general way - with the administrative units created by the metropolitan government. Those units, in turn, followed the boundaries of precapitalists aboriginal empires, *Señorios* or state-type societies, chiefdoms or linguistic partialities, as well as the geohistoric and geoeconomic regions built over millennia by the aboriginal South American and Caribbean populations (Vargas & Sanoja 1993; Vargas 1992, 1999 a, 2002b and c).

The new nations and National States worked to benefit small social elites with scarce or no social support and practically no national identity (Marmora 1986: 239). Between the sixteenth and twentieth centuries all the lands belonging to the aboriginal communities were expropriated, the negro population enslaved and discriminated against, the mestizo population socially excluded, although together they all represented 80% of the Venezuelan national population by the close of the twentieth century (Hernández et al. 1993). The social elites were, and continue to be, ambitious groups striving to get hold of all political and economic power to usurp rights, privileges, liberties, services and to appropriate for their own benefit national income. A similar social situation exists today in most of South America and the Caribbean (Mintz 1971; Britto-García 2007: 189; Dos Santos 2007:434-43).

The republican political power maximized personal benefits to the elites, without caring for the needs of the poorer national population (Sanoja & Vargas 2002). The present republican social elites do not display an independent or original cultural, social, and economic political project different to the one they played under the Spanish colonial rule. In the past they strived to improve the production of their plantations and the trade system to export their commodities (sugar, coffee, cocoa, cattle). Today in Venezuela, since the basic means of production are under social ownership, they export financial capital to fiscal havens in Europe and the United States (Britto-García 2007: 268-269).

In order to consolidate the political hold of elites upon the poorer national population, between 1900 and 1958 Venezuela was ruled by army dictatorships. Between 1958 and 1998, bipartisan class civil dictatorship - supported by the Europeans or US power - cynically became the local expression for freedom and democracy. The army and class civil dictatorships created its own historiography, the official history, to produce an image of the working class, the Indians, the negroes and the mestizos as representing a historically backward past opposed to the social progress they represented (Vallenilla Lanz 1961; Vargas & Sanoja 1993; Vargas 1999, Hernández et al. 1993; Salas 1908).

The Oligarchic Foundational Myth

National States in Latin America represent pluricultural social realities of multiethnic origins. Nevertheless their ruling elites only tolerate a single national history, a single national culture and a single national tradition being considered the cultural history of the nation (Marmora 1986: 107), leaving aside, negating and distorting the existence of historical processes previous to the formation of the national State. This cultural history becomes the national ideology of the dominant class, enabling the political

support of the subordinated popular class (Marmora 1986; Bate 1984).

The myths of origins have contributed in shaping our ideas of the past, giving order and meaning to the present (Kristiansen 1998: 24). For this same reason, the elite that ruled the Venezuelan national State created a foundational myth, a type of historical tradition represented by a pantheon of founder fathers of the nation (Vargas 2007: 15-23). This bourgeois foundational myth claims that European conquest and colonization of the aboriginal societies and territories was not a genocidal invasion to plunder riches, but, on the contrary, to save and civilize our 'savage' peoples. The so called civilizing mission supposedly played by the motherland (Spain and Western civilization) rescued us from the cultural backwardness of our ancestral societies, incapable of making significant progress by themselves. This colonial ideology also claims the assimilation of our aboriginal population to the *criolla* culture was required to include our country in the Western civilization (Vargas & Sanoja 1993; Vargas 1999; Hernandez et al. 1993).

The goal of the foundational myth built by the ideologues of the modern oligarchy was to reunite Venezuelans around the notion of a common history resulting from the defeat of the precolonial as well as the colonial past, the possession of a common religion, a common language, the castillian, and the sense of belonging to a common Western historical destiny. Nevertheless, under their rule, Venezuela, although disguised as an autonomous independent nation, never really ceased to be the colony or the neocolony of the US corporations (Vargas-Arenas & Sanoja 2005: 1-29).

The oligarchic ideology considered Simon Bolivar to be a meaningless symbol placed at the centre of a pantheon of equally meaningless founding fathers, surrounded by other personalities that fought the Independence War. The Indian warriors, as well as those individuals presently representing the dominated social block, were barred from it (Vargas-Arenas 2007: 4-10).

Cultural Values, Class Struggle, and Cultural Symbolic Structures

Since the quality of a given society depends on the general quality of its individuals (Ministry of Education 1999) and culture being the spiritual foundation of that given society, we consider culture as politically strategic to reaching its political and social emancipation through creating and reinforcing the self-esteem of individuals. Creativity, sensibility, and inventiveness must be socially valued and appreciated, as far as the members of a given society, both men and women, accept them as part of their daily life.

The process of generating value and meaning is necessarily screened through codes of cultural values. Every society creates its own cultural references to assess those values, determined by its respective symbolic structures. Culture possesses a great capacity to further forces and resources to create solidarities, loyalties and induce certain behaviours.

Culture as a creative process operates in daily life thanks to the link between consciousness and its capacity to produce values, and the cultural references people have created, are creating or have received as a legacy. These references, acting like symbolic codes, are perceived and used like differential elements in front of other social groups and also as an internal cohesive function inside the group (Vargas 1997, 2002a; Vargas-Arenas & Sanoja 2005).

When the socially dominant block exercises power over subordinated groups, they show solidarity amongst themselves to fend off the abuses of the dominant group or to limit their action. In this manner, goals and social objectives will make evident the contradiction existing in the relationships among the different sectors, with solidarity very often established culturally, using cultural symbolic references in different ways, inserted within the system of values and meanings that are created and internalized by members of the social groups (Vargas 2002a).

Cultural references are also symbolically used in daily life by the dominant block as well as by the subordinated one, as a sort of metaphor of social relationships (Vargas 2002a). Cultural forms are not revealed as specific political signs: they are determined in correspondence with the class content (Bate 1984: 118). Their utilization alludes to the gestation within each social class of an ideology conditioning perceptions on the own self, determining behaviours and, finally, the emergence of new cultural forms.

The Venezuelan National Culture and the Bolivarian Revolution

At the present time there is a new Bolivarian foundational thesis striving to create a new notion of ethnicity, understood as a 'specific system of social interrelation and organization, built upon cultural characteristics, habits and common manners, rules of social behaviour, language and historical traditions' (Díaz Polanco 1981), as well as upon the belief, shared by the members of a social group, in a common ancestor or ancestors, and forms of concrete consciousness that rule the daily life (Bate 1984; Vargas 1998a).

Since the origins of Latin American National States in the nineteenth century, nationalism was its most important ideological manifestation. Nationalism -usually related to ethnicity- has been defined as the expression and organization of the political demands of groups of a given population for self-determination within their own sovereign territory (Jenkins 1997:124).

Like all Latin American national states, in Venezuela nationalism expresses itself as the construction of a national culture, an idea closely related to the permanence of the national State. That is why, since 1830 the national bourgeoisies educated the citizens with the idea that only one national culture and one national cultural identity exist, both acting as the unifying ideology that supports bourgeois *governanza*. Their political project needed a cultural expression: the institutionalized production and reproduction of that national culture.

The concept of the Venezuelan Nation as a singular combination of multiple cultural elements and human groups ruled by a social elite, has been transmitted over centuries, internalized, enriched and accepted for generations of Venezuelans through the socializing and educational processes.

The present unfolding Venezuelan national culture performs its ideological unifying function, through a Bolivarian nationalist ideology upon which are being constructed new processes of social identification and organization. The main goal of present national culture is to strive for social unity. It is understood that national unity is based on a permanent contradiction between the national as a reality and the national as an ideal. For that reason, under the Bolivarian Revolution, national unity is considered to be based on the pursuit of:

1) the permanent construction of a new historiography where the people as a whole, not only the bourgeois social class, is considered the real protagonist of national history, as well as the sovereign holder of the common territory with its natural resources.

2) The origins of Venezuela as a nation State are considered part of a regional common history characterized by the class struggle against colonialism: consequently our political future is shared with the other Latin American peoples.

3) The creation and recreation of national cultural symbols promotes the social and cultural identification among the Venezuelans as well as their integration with the other peoples of Latin America.

The concept of national culture is a paradox: on the one hand cultural production is shaped by real phenomena created by social groups independently of the ideological distortions that might be imposed upon by some social subjects. On the other hand, social scientists also have to deal with diverse singular phenomena representing the essential fundamentals of the society (Bate 1978), particularly in a still classist capitalistic society as it is Venezuela in this moment (unequally structured and stratified). For those reasons, the Constitution of the Bolivarian Republic approved in 1999 by popular referendum considers Venezuela a pluricultural, multiethnic nation. The former bourgeois constitutions strived to assimilate Indian communities to the national culture, depriving them of their culture and their ancestral lands, as well as discriminating and excluding negro or mestizo Venezuelan populations. The 1999 Bolivarian Constitution, in contrast, fully recognizes that their social, cultural, political, economic and territorial rights are on an equal footing with all other citizens.

National Venezuelan Culture and the Popular Culture in the Bolivarian Revolution

Contemporary Venezuelan popular culture is related to the 80% of the national population that until 1998 lived in poverty and misery. The lifestyle of the middle class, roughly 19% of the national population, has been considered by many authors (Mosonyi & Fernández 1999:50) a pretend copycat of the Miami dream. Instead, under the Bolivarian Revolution, the popular culture is striving to become what would be considered the hegemonic culture of our national society. Upper or middle class ideologues have conceived popular culture as folklore, meanwhile they view theirs as the real and universal culture (Vargas 1998a; Vargas & Sanoja 2006:78; Thompson 1995: 13; (Veloz Maggiolo 1988: 183-185), defined according to aesthetic criteria such as the Beaux Arts. The popular culture is, then, the culture of the social popular class (Galeano 1984; Vargas 1995).

Final Comments

In Venezuela, for centuries the national bourgeoisie rejected their responsibility in improving the material and spiritual conditions of the 80% of Venezuelans who lived in poorer situations, staying in a sort of educative, cultural and economic limbo until 1998 when the discourse of cultural resistance long hidden from the routines of daily life, became an open cry for class struggle (Vargas-Arenas 2007:127-131). This was also part of a popular symbolic discourse, expressing the protest of the people against the bourgeois concept of neoliberal life that considers everything to be commodified, especially housing, health care and education. The Bolivarian Revolution has furthered the rupture with the neoliberal bourgeois

cultural codes by producing new social public urban spaces as well as a new urban memory based on social solidarity and popular protagonism, contrary to the individualistic, racist and capitalist concepts that had been developed by the bourgeoisie to build their urban enclaves (Sanoja & Vargas 2005; Sanoja 2008). The goal of the Bolivarian revolution is to encourage people to participate in Venezuelan as well as in Latin American culture, being freed of racist values, by humanizing labour conditions and social life, humanizing the natural environment, building respect for the environment and by recognizing the work of women as well as their equal rights.

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SHERLOCK AGAINST LESTRADE: A STUDY IN SCALE

Fredrik Fahlander

Abstract: It is commonly argued that if you study societies on the small-scale level you tend to emphasize particularities and may fail to realize the importance of outside events for local development. The grand scenario, on the other hand, often tends to reduce social complexity in favour of deterministic and simple explanations as a driving force for particular events. This text stresses that no matter what preferences one might have concerning level of scale, going deeper into details is generally a rewarding route, and when using a bottom-up perspective, detailed small-scale analysis may turn out to be as informative on the general level as it may be on the particular.

Keywords: Scale, event, large-scale process, materiality, Bronze Age, rock art

'It has long been an axiom of mine that the little things are infinitely the most important.'

A Case of Missing Identity (Conan Doyle 1892)

A famous detective once claimed that 'From a drop of water /.../ a logician could infer the possibility of an Atlantic or a Niagara without having seen or heard of one or the other' (Conan Doyle 1887). It is a quite daring proposition in which Sherlock Holmes suggests that it is possible to deduce not only larger issues, but also unknown elements from small and fragmented evidence. In *The Hound of the Baskervilles* (1902), he somewhat proves his point in a way that resembles recent discussions of materiality in archaeology (e.g. Fahlander 2008). Based on a walking stick forgotten by a client *in spe*, Sherlock successfully managed to infer the owners name, habits, personality, profession and breed of dog (although he cheated a bit regarding the latter). The somewhat philosophically problematic prospect of inferring something unknown is here confined to the domain of social action, and is hence more a question of being able to imagine new constellations in the ways people act, do and think. After all, there are not infinite ways of being human (or using a stick).

A quite important facet of Sherlock's successful 'science of deduction' concerns the point of perspective. Sherlock's deductions proceed from the 'bottom-up'; that is, he starts from the details and advances gradually towards greater issues. Archaeology has often been associated with a similar line of reasoning, i.e. the reconstruction of events based upon small fragmented traces of action. At closer inspection, however, many interpretations of the past do not follow Sherlock's course of logic, but rather use a 'top-down' approach; that is, they work from a general frame of reference through which particular excavated materials are interpreted. Such an approach better resembles the way of Holmes' antagonist, Inspector Lestrade, who is always hasty to neglect details and irregularities in favour of common-sense ratifications and/or universal generalizations. Translated to archaeological practice, 'Lestradian' interpretations of individual sites rely too much on 'contemporary analogies' (regional comparisons) or various external analogies at the expense of the local, situated material data. In contrast to such a 'Lestradian' perspective, I argue for a 'Sherlockian' inspired, bottom-up perspective, that advances from detailed analyses of materialities in their local setting – with similarly bold aspirations that archaeology actually is able to tell something about the past 'not seen or heard of before' (Fig. 1).

Particular and general perspectives in archaeology

A social event is generally caught up in nested relations between the past, present and possible futures and are not simply constituted by the local setting but also in various ways with the 'world outside' (Koselleck 1985:110). Traditionally, this complexity is formulated as a binary opposition, or a continuum, between small-scale analysis on the one hand and large-scale synthesis on the other: e.g. micro-macro, agency-structure, individual-society, local-global, particular-general, etc. (cf. Earle & Kristiansen 2010:7). The choice of one or the other level is often based on common-sense ratifications such as: 'if you only study the local you don't see the forest because of the trees', or with too wide a perspective one runs the risk of '... not understand[ing] any of the trees very well, and simply wander[ing] around the forest making claims that can never be falsified.' (Stafford 2008:139). This apparent paradox has spawned a somewhat tedious debate on the pros and cons of one level above the other as well as a

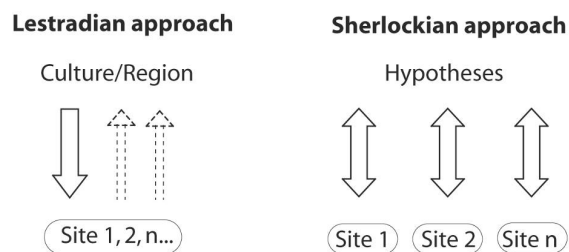


Fig. 1 A schematic illustration of the 'Lestradian' top-down perspective and the 'Sherlockian' bottom-up approach. Left: The dotted arrows refer to the lesser impact of particular sites on the general idea of a culture, time period or region. Right: general and particular information from individual sites are equally important for the continuous reconstruction of a general perspective (i.e. image, idea or preconception) of a time-space section.

number of compromise approaches (cf. Fahlander 2003:18f). It is, however, quite evident that relations between the local and the global cannot satisfactorily be viewed as a mere dichotomy or a continuum. The social matrix comprises too many complex relations and intersections in time and space: the level of scale may convey issues of the individual and the personal, the subjective and the objective, quality and quantity, phenomenology and embodiment, practice and materiality, etc. The question of scope also suffers from ideological bias from the point of research appeals. Advocates of the small-scale perspective tend to focus on differences and heterogeneity while those who promote the large-scale approach tend to emphasize similarities and parallels (Arthursson 2009:18; cf. Latour 2005:180). But, of course, such preferences have nothing to do with scale; you can as easily find heterogeneity on the grand scale as you can find consistencies between different locales.

In archaeology the level of scale has traditionally focused on long term processes. Culture historical archaeology did depart from the cultural frame, defining and differencing cultural entities in time and space. Despite an almost Sherlockian enthusiasm for details, the processual archaeologists took even broader view of the past. The long temporal scale of archaeology and the accumulated nature of the archaeological record, it was argued, suggested that it is primarily the general traits that can be reached with some degree of scientific confidence (Binford 1983; Sherratt 1995). Post-processual, or interpretative, archaeologies have been more ambivalent on the question of scale. Hodder suggests that archaeology should indeed focus on diversity rather than a general history. Particular events, he stresses, can constitute 'narrative windows' that will function as keys to understanding the 'larger flows'. Such small-scale histories may not always be commensurable but the approach is still preferred in order to avoid generalized grand narratives of the past (Hodder 1999:137, 147, 176; but see also 2003:88, 91). Despite an outspoken interest in the local and individual, the scope is thus nonetheless set on the general structures and patterns of a certain time period or a culture (cf. Thomas 2004:53; Johnson 2006:123). The particular and local seems to be addressed mainly to provide a sense of intimacy and detail (cf. Hodder 2003:91).

In later decades various proponents of postmodern archaeologies have rather one-sidedly emphasized the particular as a means of criticizing grand narratives, making queer and heterogeneity the norm. It is perhaps due to this background that the pendulum once again seems to swing towards a renewed interest in grand syntheses and the large, even global, scope. In archaeology this trend is not yet fully manifested, but is perhaps notable in the revival of evolutionary perspectives. Although hitherto many archaeologists have been reluctant (e.g. Kristiansen 2004a; Fahlander 2011; Hodder 2011), there is little doubt that other general perspectives are gaining ground in contemporary archaeology (Jones 2009:104; Andrén 2009).

The key question here, however, is not to put a general perspective against a particular one, but rather to elaborate on how, where and in what material forms the outside is articulated in the local. Such intersections in time and space can indeed be studied from a top-down general point of view, searching material support for a particular type of general hypothesis, but also from below, from the local and material point of view. It is thus important not to confuse detail with having a narrow perspective or big questions with the grand scale.

Large issues and local events

Clifford Geertz once noted that if you settle in a village to study the particular ways of an 'other' culture you often end up with a narrative of village life in general (Geertz 1973:22). But Geertz has also shown how local events, such as the case of a young boy's burial, are intimately nested within general political, religious and economic issues on a national – and in the long run – global scale (Geertz 1973:146ff). Geertz's own method on how to 'read' small-scale events (i.e. a cock fight) to infer Culture itself is not that different from Sherlock's proclaimed ability to infer an ocean from a drop of water. Such a move from the particular to the general is indeed possible, although the soft post-structural textual analogy Geertz uses is less convincing as an argument (cf. Olsen 2010:39ff).

Another way of illustrating the relation between the small and the big is provided by Bruno Latour who over the years repeatedly returned to the issue when elaborating his actor-network theory (ANT henceforth) (Latour 1991, 2005). To Latour, micro and macro are not two levels with an internal logic of their own. Macro structures, he writes, do not enclose the local like the case of a Russian Matryoshka doll, 'the outside is rather related, connected, attached and associated with local practice' (Latour 2005:177). Latour argues that the social generally is 'flat' and is best analysed in the form of networks of human and material actants. However, despite the fact that the ANT perspective is probably quite an accurate portrayal of how the social works; it is still not very helpful. Any small network of related actions, events and materialities will soon rapidly expand into a large web deprived of meaning (contra Geertz). Another objection against ANT is that networks, precisely as in the case of Giddens' structuration theory, do not fully take into account that some nodes/actants or agents/structures are guaranteed to be more powerful and influential than others in any given situation. Events and processes are also often dynamic, allowing a certain kind of abrupt shifts and displacement in power relations between the involved actants that can be difficult to anticipate (Fahlander 2001:21f; cf. Žižek 2007:241). Latour's solution to this problem is to dodge the question by advocating an 'ethnographical' approach which primarily aims to *describe* the way networks work under certain circumstances (Latour 2005:136f, 156f, 184). In this sense ANT is not that different from strands of microhistory that write 'singularized histories', that is, individual local narratives rather than general synthesising histories (e.g. Magnússon 2003). ANT and structuration theory, like most other attempts to overcome the conceptual divide between scales, thus only provide generic models and not operational methods ready to be applied.

In small things excavated

Although the stratified topography of micro, meso, and macro levels provides a less suitable way of grasping the social, and mediating, 'flat', approaches too generic, the question of scale and scope – no matter how grand or small – always needs to consider empirical data at some stage. For archaeology that means making sense of excavated fragmented materialities and vague, often superimposed, traces of action. These silent witnesses of the past are, however, only rarely considered sufficient. It is a rather common practice to fill any blind spots with the aid of cross cultural analogies or general models of small-scale social practice (Fahlander 2008:144ff). The crux of the matter is that being too quick to employ external sources may result in a failure to explore the full potential of the material record. Sometimes we just need to dig a little deeper instead. An illustrating example

is Le Roy Ladurie's fascinating study of the medieval village of Montailou, which he compares to 'a drop of water in a puddle', which when magnified 'forms a small universe for world history' (Le Roy Ladurie 1976:418). Ladurie's way of tackling the problem of scale and scope is thus not comparative or to seek confirmation or additional information outside the local setting of Montailou, but rather to reach greater issues by going even deeper into details. Perhaps archaeology, too, would benefit by having a little more faith in the information that can be retrieved from the material record?

Indeed, analogic reasoning and some level of generalization about human practice is unavoidable to some extent, but also contemporary analogies can considerably lessen the prospects of revealing something 'not seen or heard of before'. Take, for instance, the remains of the Iron Age boat found in the Hjørtspring bog in Denmark which was first believed to originate from the Bronze Age and thus to some extent was reconstructed with inspiration from rock carvings (Fredsjö, Janson & Moberg 1956:16). Interestingly, the excavated boats that actually can be dated to the Bronze Age look quite different to the Bronze Age 'ships' that are carved (e.g. Clark 2004). The opposite way of reasoning, turning single finds into the norm, are likewise common. One example is the famous Danish oak-coffin burials, which due to the favourable preservation circumstances constitute an extraordinary source to North European dress and hair fashion of the Bronze Age (see e.g. Bergerbrant 2007). Because of these conditions, the Danish oak coffin graves have for many years been iconic for – if not the whole Scandinavian Bronze Age – at least the early part of the period. However, when studied in detail they seem to represent a quite marginal and queer type of burial. The dendrochronology of eighteen of the coffins reveals that they were constructed within a short period of 150 years (1268-1396 BC), and fifteen of the burials fall into a 50-year period (Christiansen 2006). In this case a particular short-term burial practice has thus been 'upscaled' to signify a whole era of several hundred years, and as such has affected a range of subsequent interpretations of e.g. power, religion, social organization and gender structures.

Another case from the same period that illustrates the differences between a bottom-up and a top-down perspective is the recent analysis of the bone material from the Bronze Age cairn of Kivik in the Swedish province of Scania (Goldhahn 2009). The cairn is by size, location and content (carved cist slabs) an oddity, but it has still managed to fit into many great schemes of the Bronze Age, ranging from Sven Nilsson's (1862) Phoenician chief to Kristiansen's (2004b) Scandinavian Odysseus. The analysis of the bones, however, tells a rather different story. Instead of being a monument for a single great individual, apparently the cairn was reused over a longer time period for the burial of several quite young individuals. What makes the Kivik cairn particularly interesting in this case is the way a general idea of a cairn 'ought to be' was superimposed on the actual materialities excavated. It is retrospectively interesting how archaeologists have struggled to fit the contradictory data from the cairn (mismatching dendrochronology, bronzes from different periods, etc.) without questioning the general idea of 'one monument, one event, and one individual'.

It is noteworthy how closer examinations of details always seem rewarding – whether it concerns complex features or sites such as the Kivik cairn, the Ice Man Ötzi, or singular objects such as the reinterpretation of the Balkåkra gong from a shaman's drum to a chiefly throne (Kristiansen & Larsson 2005:202; cf. Kristiansen 2002). Consider, for instance, the 'microexcavations' of burial

pots from the Late Bronze Age at Cottbus, Germany (Gramsch 2007). In this case, the pots themselves were excavated in layers, revealing that the cremated bones were placed in an anatomically correct order, that is, foot bones at the bottom, followed by pelvis fragments, and topped off with bones from the skull. Whether one wishes to interpret this phenomenon as a *rite de passage* where the body is reassembled within a new ceramic 'skin', or if it has something to do with ritualized practice when choosing bone fragments (always begin at the foot end of the pyre) is up for discussion. The main point here is, of course, that the extra level of detail gives us more solid information for our interpretations of the cremation ritual at this particular time and place than any contemporary analogy could have delivered. As such, these cases remind us that we (like Lestrade) are often too hasty and conform to general schemes to the extent that we neglect or do not bother asking other questions, or digging a little deeper into detail. The more in detail we go, the more something unexpected and interesting tends to emerge that challenges our preconceptions; the things talk back to us, argue with us and even resist our ideas about them.

What would Sherlock do?

Although detailed individual examples may be informative, they will not solve the difficult question of how a particular practice relates to a greater picture. There is no simple solution at hand applicable for each and every situation. One possible way to bridge the particular and the general is to identify and focus on 'structurating situations', that is, formative events where a number of local and regional structurating principles are forced to intersect in new ways, for example Latour's notion of the *oligopticon* and Geertz's cock-fight. One typical setting of a structurating situation can be found in periods of contact; in the encounter between people of different traditions and ways of thinking – or encounters with new material or materialities. In such circumstances the normative is often articulated and moves from the semiconscious to the discursive, which may result in different types of effects, such as creolization and hybrids (but also in greater conservatism and formalization). In recent discussions, social encounters are typically understood in terms of intricate layers of confusion and misunderstandings on the one hand, and the creativity of the individuals involved in their struggle for power on the other (Fahlander 2007).

Such a perspective might apply for one of the most iconic features of the Nordic Bronze Age, the rock carvings. The imagery of the Other is always tricky to handle because it 'talks back' to us in a quite direct tone, perhaps even surpassing the rhetoric power of a written text. Traditionally, the rock carvings have primarily been discussed in terms of what they represent, mean or symbolize. They have been closely tied to a general Bronze Age cosmology of which the rock imagery seems to be both cause and effect (see e.g. Bradley 2009:125ff). Seen principally as symbols, the imagery thus seems more or less bound to be interpreted from the top-down. However, a bottom-up perspective may help to avoid some of the implicit circle-reasoning and help to explore new ways of understanding the practice of pecking images in stone. The case when Sherlock encountered a question concerning a strange series of stick figures in *The Adventure of the Dancing Men* may prove to be a source of inspiration here (Conan Doyle 1903). When faced with drawings of men in different positions Sherlock did not concern himself with what the images were supposed to represent (Fig. 2). Instead his interest was sparked by the particular circumstances in which they appeared, which also turned out to be the key to the mystery. If a similar Sherlockian approach was to

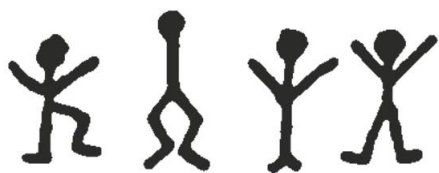


Fig. 2 'The Dancing Men'. A series of figures made to look like random sketches by children to conceal that these characters convey a message. Illustration drawn by Conan Doyle (1903).

be employed to rock carvings it would turn the focus away from meaning and symbolism towards issues of relative chronologies, variation of motifs or elements, and their spatial distribution. If approached as articulations of an encounter, they can be studied in terms of structuring situations, where the focus is set on the practices that surround them; what happened before, parallel to and after the introduction of certain motifs or combinations of pictorial elements. As such, the carvings are thus less likely directly to represent any certain social collective or general cosmology, but rather a material articulation of a series of encounters between e.g. marine-terrestrial, north-south, stone-bronze, or simply between different 'ways of doing things' (Fahlander 2012a; 2012b).

Summary

The issue of scale and scope is perhaps one of the most complicated perceptual issues in social studies. There are a number of varying scales that sometimes intersect and sometimes run parallel to each other in unpredictable ways. For instance, studies on long term processes do not necessarily imply a grand scope precisely as detailed studies of certain artefacts (e.g. typologies) may indeed be quite general in scope. In principle it all comes down to levels of generalization over time, space, and between different groups. We may never completely be able to avoid a certain amount of comparative and analogic reasoning in our interpretations, but the running question is to what extent are such 'added' aspects really necessary in relation to what can be gained through further detailed archaeological analyses? In this text I have argued for a Sherlockian approach, which examines a problem from the bottom-up rather than from the top-down. It may in some cases lead to particularistic and local, 'singularized histories', but its promise of greater prospects for being able to tell something new about the past 'not seen or heard of before' is but one chief reason that outweighs such objections. Another argument, which I have tried to illustrate by the examples in the text, is that detailed and small-scale studies generally seem to fit the archaeological data better. In contrast to sociology, and sometimes anthropology and history too, the only hard-core evidence we have are the small drops of water we excavate. In the study of prehistory, the 'oceans' and the 'waterfalls' are interpretations, not points of departure. It is quite elementary, actually.

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ARCHAEOLOGY IN THE MAKING: THE HUMAN FACE OF PASTS-IN THE-PRESENT

Michael Shanks

Abstract: Based upon a series of interviews with archaeologists, this paper suggests that most accounts of the recent history and the disciplinary structure of archaeology, its methods, theories and practices, are misleading. While they quite appropriately synthesize and seek structure, they lose the messy pragmatics of working in the field, conducting research projects, building and managing institutions: they miss what can be called the "human face" of archaeology. Drawing upon the field of Science Studies a new schema is suggested for understanding archaeological and heritage practice that focuses upon the ontology of our relations with the remains of the past, skills and the technology of knowledge, and the powers of association in establishing a diverse commons that bridges past and present.

Keywords: history of archaeology, contemporary archaeology, archaeological theory, archaeological method, science studies

Since I moved to the United States a dozen years ago, I have spent a good deal of time in northern California in a small back woods town called Boonville in the Anderson Valley on Route 128 as it makes its way to the Mendocino Coast. Always an agricultural community, logging, sheep and fruit trees are giving way to vineyards, the soil and climate especially suited to Pinot Noir, and, for some, there is renewed prosperity. A very strong sense of local identity and awareness of the history of the valley over the last 150 years includes the celebration of the unique local dialect, Boontling. Not really a dialect, this is an argot or secret(ish) language developed back in the late nineteenth century probably by only a couple of the valley's 700 or so residents. Folklore specialists and local historians got interested in the 1960s and documented its thousand or so unique words and phrases that betray some origins in Gaelic (Scottish and Irish), Spanish and Pomoan, the language of the local native Americans. I am not sure how many locals now seriously use Boontling, to what extent it has gone the way of so many other features of local and regional heritage worldwide, becoming a self-conscious and nostalgic revival and anachronism. For me, with my archaeological sensibilities, Boontling is certainly an intangible feature of the cultural landscape, alongside the old forest tracks, the odd solitary apple tree, legacy of the fruit industry, barns and run down saw mills, quite a stark contrast to the very smart wine tasting rooms that started appearing only a few years ago. Boontling is heritage; as a trace of the past, in revival of sorts, and somewhat cherished, it has a distinctively archaeological character.

One afternoon this summer of 2012 I was exploring the secondhand bookstore in the middle of town. There are always a few titles that catch my interest, in contrast to the many and familiar paperback novels. This time it was a fine hardback copy of *The Rise of Anthropological Theory: A History of Theories of Culture*, by Marvin Harris (Thomas Y. Crowell, New York, 1968). I had been much influenced by this great intellectual history as an undergraduate at Cambridge in the late 70s, and, while not agreeing with the way Harris contrasted historical and cultural materialism, there was no doubting the exemplary scholarship of the book, and its importance for grounding our work as anthropologists and archaeologists in a clear awareness of the history of ideas. Its topic presented quite a contrast with the setting, the bookstore next to the general store.

My trip into town was a break from correcting the proofs of a book called *Archaeology in the Making*, 2012. This began as a

conversation with Bill Rathje, when he arrived in the Bay Area a decade ago from University of Arizona Tucson. We started talking about our shared interest in modern material culture, what is now called the archaeology of the contemporary past, his invention of garbology, my fascination with what I call the archaeological imagination, ancient civilizations in the old and new worlds, anthropological theory and method - all things archaeological. We went on to share the conversation with friends and colleagues who came to visit Stanford University and our lab *Metamedia*, ran a seminar together centred on these personal discussions about the current state of archaeology, and came to realize that we were gathering a remarkable set of insights into the workings of contemporary archaeology, as seen through this quite unrepresentative, though, we suggest, very interesting sample of archaeologists. The frequent reminiscences took this picture back into the 1960s and the great changes that came with the expansion of anthropological archaeology in the Anglo-American academy. Chris Witmore took the initiative, joined the ongoing conversation, and, particularly as Bill's health failed, guided the project from a series of occasional get-togethers through to publication, and a large one, of some 400 pages.

The conversation Bill and I had with Kristian Kristiansen features prominently in the book. As with most of our conversation partners, we ranged over careers, projects managed, opportunities lost and followed, personal experiences, and, perhaps above all, the rewards of lives spent in pursuit of the archaeological. We shared with Kristian his early groundings in structural marxist theory, doctoral research into the minutiae of Bronze Age artefacts, his move into the Danish ministry responsible for archaeological heritage, efforts to build a new European association of archaeologists, fieldwork across Europe, and Kristian's vision of the shape of European prehistory, modeling at the macro scale united with a traditional archaeological passion for the details of material culture. It is an extraordinary range.

Intellectual histories like that of Marvin Harris, or Bruce Trigger's *History of Archaeological Thought* (first edition, Cambridge University Press, 1989) select, synthesize and project an analytic architecture through archaeological practices, offering a more or less coherent account of the development of academic archaeological publication, typically in hindsight. It is no surprise that doing archaeology is much messier. Textbooks introductions to the methodology of the discipline often use particular projects as examples, but then they are *paradigms* or *models* of practice.

What has struck us forcibly about our conversations about the way archaeology happens is that there is such a yawning chasm between the history and textbooks and the way archaeologists tell of their experiences.

Science Studies, new approaches to understanding the history and practice of science, grew out of similar, let's call them ethnographic, encounters with what goes on in labs and lecture rooms, in fieldwork and in the publications of professional associations, in the award and management of research funding. In the 1970s Steve Woolgar and Bruno Latour went into a neuroendocrinology research laboratory at the Salk Institute as anthropologists and found that what was going on bore little resemblance to what was held to be scientific method (Latour and Woolgar 1979). Latour expanded on this with his powerful *Science in Action: How to Follow Scientists and Engineers through Society* (1987). We don't have to take up an epistemology that would privilege the social practice of science over the realities of the physical world to accept that there are serious inconsistencies in what is said to be happening in the pursuit of scientific knowledge, archaeology included. This is being investigated by some historians of archaeology (most recently Jensen ed. 2012); our challenge in our conversations with contemporary archaeologists was to find a way of making sense of what we were sharing.

Our conversations witness just how diverse are the habitats of archaeology. How does one sketch a common chart of a field of practices which includes synoptically transforming the visual properties of a clod of soil into a Munsell code, sorting through a bag of garbage in Tucson, or investigating a warehouse full of illicit antiquities in Geneva? Here we also may observe just how variable *linkage* can become, from the seemingly arbitrary to the meticulously crafted. Because of the ties cultivated between Lewis Binford and members of a Nanaimut community, he and his students were able to witness the steps of a process open to few outsiders. Before the formation of the European Association of Archaeologists, forging research links across Western and Eastern Europe was a quite different task. Interdisciplinary research funding in what is termed digital humanities has presented many possibilities for major archiving efforts that were inconceivable only 15 years ago.

The shape and character of archaeology resists our efforts at explication. Just as it would only represent a partial picture if we put charismatic characters at the centre of archaeology's history (as did Tim Murray in his edited work of 1999), it would be wrong to locate any far-reaching coherence in an image of diverse intellectual traditions, regional or otherwise (see Biehl, Gramsch & Marciniak 2002). While we continue to give credit to a focus on broad social or political processes that affect archaeology (Kohl & Fawcett 1995; Trigger 1989), our conversations strongly suggest we need a richer, more nuanced, more human account of archaeology. We need to engage *the human face of archaeology* - what archaeologists get up to, and not just academics, not just publication, and the quite artificial accounts of debate in journals and professional discourse.

Archaeological science is a flawed assemblage of thinking, aspirations, practices, highly personal, constantly confronting institutions and discourses. It is a weakly articulated assemblage because there is no teleology here, no great drama or inexorable journey from less ignorance to more enlightenment, from one paradigm to another, with debates between coherently constituted communities of processualists and Marxists, or fieldworkers and academics, whatever. We found nothing like the accounts of

intellectual history in our interviews with some who are held, and appropriately, to be key figures in archaeology over the last 50 years, even though they were all very familiar with the terms that are used to describe archaeological method and thinking, and even though everyone *readily used* these terms. Instead, in our conversations, we heard more about the opportunities opened up (and as often closed down) for our labours as archaeologists, the potential to affect the manifestation and mediation of the past in the present, as we were led in such wonderful places as spelunking with Patty Jo Watson, among the Inuit with Lewis Binford, into the ex-Soviet states with Victor Buchli, as we shared with Colin Renfrew the concerns prompted by the contemporary looting of antiquity, heard Ruth Tringham's memories of setting out on her own archaeological journey, discussed field methodologies with Susan Alcock and John Cherry, faced the challenge of constructing prehistory for a new Europe with Kristian Kristiansen.

We suggest that the notion of 'ecology of practices' (Stengers 2005, 2010) offers a way of understanding the character of archaeology and its practices as they are experienced by archaeologists. More than just describing interconnected practices, an ecology of practices *intervenes*. We are drawing specific attention to the etymological derivation of ecology from the ancient Greek *oikos*, specifically the common household, its management and habitat. Ecology is about interconnection, management and local adaptation. Renfrew's account to us of his collaboration with geologists researching ancient obsidian sourcing showed the way that practices transform and become something else when they pass into a new milieu. Obsidian sourcing in archaeology has quite a different impact than in Geology. An ecology of practices aims to capture, as Stengers puts it, 'the construction of new "practical identities" for practices, that is, new possibilities for them to be present, in other words to connect' (Stengers 2005: 186). So archaeological practices such as excavation and visualization should neither be defined as copies of practices developed by soil scientists, photographers, architects, nor should they be regarded as derivative.

Instead, they *connect*. The emphasis here is upon process and interconnection; rather than offer a definition of archaeology, we do better to consider that archaeology is no more or less than what archaeologists do.

The challenges to the way we typically think of archaeology that come from simply listening and watching archaeologists carefully are so great that they prompt us also to offer three new summary concepts to describe the work of archaeology: *pragmata*,

tekhne, and *demokratia*. We make no apology for neologism and our use of ancient Greek terminology. We argue that new concepts are needed to see freshly into what our conversations are telling us about our discipline, its practices, scope and reach through the heritage industry, to reframe our perspective on the workings of archaeology. Greek terms distance us from conventional commonsense understandings of academic disciplines and their contexts. Each term is meant to bridge some typical, and, we argue, confusing and debilitating, distinctions in the description and understanding of archaeology, and indeed other disciplines.

Pragmata refers to both things and their constitutive practices: *pragmata* assumes the entanglement of things and practices, places and events, people and objects/ instruments. *Tekhne* describes the craft of archaeology (Shanks 1992; McGuire & Shanks 1996), the art/science, the know-how, the competencies and agencies in pursuing (archaeological projects). *Demokratia* is not democracy,

but the agency of the commons, the powers of association, issues of establishing a commons centred upon the past-in-the-present, bridging the past and its representation or mediation, connecting and acknowledging diverse interest. The commons refers to a community and its mode of inhabiting its world of goods, including tangible and intangible heritage. Ultimately *demokratia* is about the civility of archaeological practice, care and respect for people, sites and things.

Pragmata. In a hybrid field between the sciences, humanities and social sciences, archaeologists work on what remains of the past in practices that combine the analytical, empirical, interpretive and creative. Here we group attitudes and engagements with the objects of archaeological interest, in the quest to reconstruct, repair, respect the remains of the past, in creative use of whatever resources are available — material, social, cultural, emotional — to enable archaeological purpose. Encompassing the richness of the old Greek meaning of the term, *pragmata* are ‘things’, but also, ‘deeds’, ‘acts’ (things done), ‘circumstances’ (encounters), ‘contested matters’, ‘duties’, or ‘obligations’. The verb at the root of *pragmata* is *prattein*, to act in the material world, engaged with things. This is cognate, for us, with making as poetics (the Greek root is *poiein*) — a creative component to practice generally. Here we place emphasis upon the care archaeologists have for their ‘matters of concern’, and their larger loyalty to what we recognize as *ta archaia*, literally translated as old things. Remnants, vestiges, monuments, artefacts hold memories which archaeologists attentively piece together with, typically, an aspiration to fidelity and authenticity. Of course, *archaia* demand a particular orientation, both practical and imaginative. To regard these old things of archaeological interest as *pragmata* reminds us of the primacy of engaging with things, that many others are drawn to these matters in different ways, in different engagements or encounters, and so may even constitute them as different things, because *pragmata* do not stand on their own — they become what they are through our relationships with them. This involves the work of what we can call the archaeological imagination.

Archaeologists do not discover the past as it was; they work on what becomes of what was, and they work with old things in order to achieve particular ends. These ends may be narratives related to long-term use of wheels, stories concerning the origins of agriculture, the kinetic experiences of holding a pot, or the act of sharing the sensory intimacies of exploring a long-forgotten cave; they may be more tangible, such as the construction of a museum or a visitor centre. Archaeologists deliver stories, big and small. Archaeologists generate tacit experiences with the things of the past. This commitment is borne out in archaeology’s diversity as a bridging field connecting diverse ways of working with remains. Here *pragmata* speak to the archaeological imagination; they reveal how an archaeological imagination hinges upon things and creative approaches to them.

This constitutive importance of particular engagements with the past, as the past comes to be what it is through our actions upon it, means that there is no definitive end to the past; the past lives on in our relationships with what remains, and so there is always more to be said and done; the challenge is to meet things, the past, halfway, in our future-oriented archaeological projects to make something of what remains. Bill and I followed how Lewis Binford’s interest in Nanamuit amulets and Neanderthal milk teeth connected with a commitment to community; how Michael Schiffer’s passion for technological change includes electric cars, and making pots; Alison Wylie connects experiences of Fort Walsh with the ethical practices of stewardship.

Tekhne. Skills and competencies, and the institutional supports for archaeological work: the conditions that make archaeology possible; the workings, the *pragmatics*, of a discipline. What considerations go into project design? What is the composition of an institute? What is involved in the management of a contract firm? What are the components of an archaeological curriculum? How does one creatively negotiate the constraints government regulations place upon archaeological surveys? How do the experiences of working in the heritage sector and the academy differ?

Tekhne refers to the creative craft of archaeology and its distinctive modes of engagement that hinge between people getting on with things, and, indeed, the rapports between things. *Tekhne* denotes adept and skilled making, the means and ends by which something is accomplished. Techniques and skill are not only requisite for delimiting the edge of a wash deposit; they are also critical attributes of negotiating with descendant communities in Oakland, writing a funding application for archaeometry, or teaching prehistory in a classroom. *Tekhne* therefore refers to artifice — following the cut of a ditch, recognizing *terra sigillata*, negotiating review boards, teaching the Harris Matrix, or writing to funding agencies, and to those atmospheres of archaeology, its practical milieu or infrastructures — composed of corridors and offices, classrooms and archives, laboratories and museum storage depots, excavation trenches and survey transects. Institutions have played a crucial role in professional archaeology and heritage management since the mid nineteenth century; their composition, who sits in offices, what books go on the shelves, how they can be made to follow an agenda is a key component of archaeological practice. Beyond institute corridors there are matters of tacit knowledge and skill in archaeological practices and how competent archaeology is perpetuated. Competence is tied up with one’s ability to negotiate diverse sets of interest in the world of cultural resource management as well as the academy. And this begins with cultivation of a professional self-image centred upon a commitment to communities and their material pasts. Kristian Kristiansen shared with us his unique experience across different sectors of archaeology, from managing projects for Danish Heritage to directing a major research institute at Gothenburg. Given his background Kristian takes quite seriously the question of how rifts form in archaeology and how to counterbalance them.

Demokratia. Throughout our conversations we encountered a deeply seated *political* commitment. Politics: ours is a broad definition that takes in commitment to certain common values, principles, ethics that enable an authentic engagement with the past in, *a fortiori*, certain kinds of contemporary collaborations and communities. Involved are mindfulness and critique of stakeholder standpoints, interests and ideologies.

Politics is considered here in a double sense. Politics centres upon issues raised in a public forum. Here one encounters the old Greek meaning of *ta politika*, which denotes ‘public matters’ or ‘civic affairs’. In a second sense, politics is connected to a kind of curious and probing attitude (Shanks 2004). Taking direction from critical theory (Leone, Potter & Shackel 1987; also Wilkie & Bartoy 2000), this is politics as a spirit of caution and concern set to expose assumptions and the taken-for-granted myths perpetuated to facilitate control, to extend power and, thereby, its inequities. Politics is not only a matter of worrying over what is best; politics is tied to a sustained commitment to effect positive social change as a component of humanistic and scientific responsibility (McGuire 2008). An ethnographer’s positioning vis-à-vis local communities is a matter of unrelenting concern. Many

archaeologists feel a larger loyalty to accountability, equality and, ultimately, justice.

Political commitment is a mode of kinetic experience realized through sustained action and advocacy. But one doesn't need activists or politicians, one doesn't need local communities or regular citizens to generate issues of political concern. It is here that we may situate our conversations with Meg Conkey and Ruth Tringham who, in sharing their personal paths through archaeology, revealed how politics are not confined to particular sites, but permeate diverse relations among colleagues, societies, and institutions, how politics infuse the selection of projects and even personal life. So, if politics turn around controversies, we connect the issue of politics to the question of commons, the question of composition. This issue of what is held in common by communities of archaeological interest brings us to another consideration, which is most effectively rendered in its old Greek meaning: *demokratia*: conventionally translated as 'rule' (kratos) of the 'people' (demos). The term *demos* also connotes 'district, land, or country', 'the place where people live', or the 'commons or commonalty'. *Demokratia*, for us, forefronts the past as a matter of *res publica*, a matter of common concern and involvement.

This is only just the beginning, I suggest, of a pragmatic understanding of archaeology, as much an aspect of certain kinds of relationship with the past as a demarcated discipline: heritage industry has always trumped the academy (more reflection can be found in Olsen et al. 2012).

My more personal point? The extraordinary, sometimes bizarre, associations that we encounter and forge in our archaeological explorations are the human face of the discipline, its heterogeneity, heterodoxy. Getting to know Kristian Kristiansen since we first met in Paris in 1992, when he presented a model for European prehistory, has taken me through his management of field projects and the Institute in Gothenburg, discussions about the history of our discipline, bridging professional field of heritage management and academic research and pedagogy, all the components of this ecology of practices that is archaeology. Kristian is thus the most consummate of archaeologists, and, above all, in his inspiring understanding that this heterogeneity, this diversity and reach, centring upon our collective affective agency, is precisely the deep humanity of the past.

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PRACTICES OF ARCHAEOLOGY

TIME TRAVELLER: MONTELIUS AND THE BRITISH BRONZE AGE AFTER 100 YEARS

Richard Bradley

Abstract: A number of British scholars have been interested in the Nordic Bronze Age, but fewer Scandinavian researchers have taken an interest in the equivalent period in Britain. Kristian Kristiansen is one of the exceptions, but he has an important predecessor. In 1908 Oscar Montelius published a substantial review of the chronology of the British Bronze Age, based on its burials and metalwork hoards. Today his paper is very little known. Over the century since it appeared, other schemes have been proposed, some of them differing fundamentally from his one. What is extraordinary is that Montelius's chronology conforms very closely to the results of recent work in Britain, much of it based on radiocarbon dating. This contribution considers his working methods and asks why his study was a hundred years ahead of its time.

Keywords: Montelius, Bronze Age, chronology, Britain, Scandinavia, burials, hoards, radiocarbon, travel

PART ONE

The chronology of the British Bronze Age

There has been a long history of interaction between Scandinavian and British archaeologists. It was most obvious during the nineteenth century when the Three Age System had its initial impact outside Northern Europe. Peter Rowley-Conwy (2007) has traced this process in a recent book and has emphasized the special importance of personal contacts between scholars in these regions. The new way of thinking was adopted with particular enthusiasm in Scotland and was popularized by Sir John Lubbock's famous book *Pre-Historic Times* (Lubbock 1865; Briggs 2007: 236-43).

During the twentieth century the character of this relationship has changed, and there has perhaps been more common ground between students of the Migration Period and the Viking Age. The main exception was Grahame Clark, who wrote two books on *The Mesolithic Settlement of Northern Europe* (1936) and *The Earlier Stone Age Settlement of Scandinavia* (1975). A more recent instance is the recipient of this festschrift, Kristian Kristiansen, who is a familiar figure at conferences in the British Isles.

One name rarely features in narratives of this kind, yet he was one of the most famous archaeologists of his day. This is the Swedish scholar Oscar Montelius. Whilst he plays a crucial part in discussions of European prehistory, his distinctive contribution to British archaeology has been almost entirely forgotten. In 1908 he published the study which provides the subject of this paper. It was entitled 'The chronology of the British Bronze Age'. This was a comparatively late work and began as one of a series of lectures that he gave at University College London.

Despite his international reputation, Montelius's account was not well received and has rarely been cited by specialists on this period. The reason for drawing attention to it now is that his conclusions were far ahead of their time. A century after his article appeared, it is worth returning to his work and asking why his chronology has proved to be so accurate when many of his successors were mistaken. A major factor was the importance of travel in the ancient world: a topic which has interested Kristian Kristiansen in recent years.

Premises and source materials

Montelius conceived his paper as one of the series of studies of Bronze Age chronology in different parts of Europe, and he followed the methodology that he had developed in earlier publications (Gräslund 1987). He combined the classification of different kinds of artefacts with an investigation of the associations between them. For that reason he placed a special emphasis on the contents of graves and hoards. In each case he argued that particular kinds of object had been committed to the ground simultaneously. By comparing those collections with one another he could work out the order in which they might have been made. Another clue was provided by burial rites, and he distinguished between deposits associated with inhumations and those which accompanied cremations.

In common with other parts of Europe, the earlier phases of the insular Bronze Age were characterized by grave groups which included a variety of artefacts, but in later periods the main source of information was provided by hoards of metalwork. More recent research has suggested that in certain instances those graves could have included heirlooms (Woodward 2002). Similarly, the contents of a few bronze hoards may have spanned several phases (Stead 1998: chapter 8). Even so, the principles that Montelius followed do apply in most cases. They retain their validity today. In studying British and Irish artefacts he drew on a second source of information, for in certain cases the metal content of individual objects had been analysed.

When Montelius investigated the chronology of Bronze Age Scandinavia he was able to draw on his experience of examining artefacts at first hand. His account of Bronze Age Britain and Ireland drew on typological studies that already existed, in particular the work of John Evans (1881). Montelius made extensive use of other publications which he listed in his article, in particular the writings of John Thurnam, John Abercromby, William Greenwell and Robert Mortimer in England, Joseph Anderson and Daniel Wilson in Scotland, and George Coffey and William Wilde in Ireland. It is clear that Montelius made full use of his enormous library.

The main influence was that of Evans, whose book *The Ancient*

Bronze Implements, Weapons and Ornaments of Great Britain and Ireland had appeared twenty-seven years earlier in 1881. One starting point was the way in which he had divided the British Bronze Age into three periods. Montelius claimed that his own approach to typology was influenced by *The Origin of Species*, but, though the paper was written for a British audience, Darwin's name was never mentioned. Still more revealing is the omission of the work of Darwin's disciple, the English archaeologist Pitt Rivers, who compared the evolution of ancient artefacts with processes in the natural world (Pitt Rivers 1906).

The subdivisions of the British Bronze Age

In contrast to Evans, Montelius divided Bronze Age Britain and Ireland into five periods, the first of which he called the 'Copper Age'. This was an idea that never attracted the attention it deserved. There are problems of terminology even today, for on both sides of the Irish Sea copper was being used before the adoption of bronze. Archaeologists are unsure if this practice should be described as 'Late Neolithic' or 'Early Bronze Age'. Indeed, the delegates at a recent conference could not decide whether it would be more satisfactory to talk of a Chalcolithic period (Allen, Gardiner & Sheridan 2012).

Montelius's Copper Age is the first of the five periods which make up the insular sequence, which began with the first metal artefacts about 2500 BC and ended around 800 BC with the earliest use of iron. Both these dates were established by comparison with the chronology of Continental Europe. In particular, his Periods 3 and 5 correspond to phases that he had already defined in an account of Bronze Age France.

All but one of the five periods recognized in Britain and Ireland were of similar duration: between 250 and 300 years. This is not unlike his scheme for the Scandinavian Bronze Age which retains its importance today. Although Period 6 in Northern Europe overlaps with the British Early Iron Age, the rest of the Nordic sequence was divided into five phases of equal length. In this case each of them lasted for 200 years. These schemes had another feature in common. Part way through the sequences the evidence of bronze hoards assumed more importance than grave goods. In Britain it happened at a time when there were important changes in the pattern of settlement, but a similar distinction is not so obvious in Scandinavia.

Comparisons with other countries

By the time Montelius published his study of the British Bronze Age he had already investigated the chronologies of a number of other regions. He refers to this work in his paper. Among the countries he had considered were Sweden, Norway, Denmark, Germany, Switzerland, Belgium, France, Italy, Greece and Egypt. They spanned two geographical axes that were important in the earlier second millennium BC. One extended through Anatolia, Central and South-east Europe as far as Germany and Scandinavia. The other connected Britain and Ireland to France, Belgium, the Netherlands, Italy and Greece. Montelius had the knowledge and experience to investigate both networks, but two of the most influential studies linking the British Isles to more distant areas would not be written until many years later. The first was Stuart Piggott's account of the Wessex Culture which identified similarities between grave goods of the Early Bronze Age in southern England and the contents of the shaft graves of Mycenae (Piggott 1938). It was published thirty years after Montelius's article appeared. The second was Eoin MacWhite's

important study of the Atlantic Bronze Age which was published thirteen years afterwards (MacWhite 1951). It brought the Iberian Peninsula into discussions of Ireland and Britain.

A distinctive feature of the original study by Montelius is how often individual artefacts from Britain were compared with objects from Northern Europe, and more specifically with those from Sweden. He had examined the Scandinavian finds at first hand and they would have been familiar to him, but subsequent work does not suggest that there were close links between Britain, Denmark and Sweden. Ironically, such connections have been suggested between South Scandinavia and south-west Ireland, but this idea was not proposed until 1974. That was many years after Montelius had died (Eogan 1974).

He also compared the British material with finds from nearby regions of Continental Europe, and this approach has been followed by more recent writers. He paid less attention to contacts across the southern North Sea. That was unfortunate as there are important connections between British metalwork and artefacts from the Netherlands (Butler 1963), although the idea of migration between these regions has been abandoned (Theunissen 2009). Recent fieldwork also suggests that during the middle of the second millennium BC the Dutch landscape underwent rather similar changes to those in lowland England (Arnoldussen & Fokkens 2008).

A second gap in his account was the absence of any sustained analysis of the artefacts associated with the Atlantic Bronze Age. They included finds from western France, Portugal and Spain but too little material was available for Montelius to have linked his sequence to the chronology of the West Mediterranean. Perhaps it was because his research placed so much emphasis on the Nordic Bronze Age that Montelius was more concerned with connections with Central Europe. Where they extended even further, he was most interested in the archaeology of Italy and Greece.

PART TWO

Commentary

The aim of Montelius's 1908 paper was to review the threefold sequence suggested by Evans. He intended to establish a more detailed phasing for the British and Irish Bronze Ages and to work out their absolute chronology. The best way of showing how little impact his work had on later scholars is to compare his scheme with the dates proposed by Christopher Hawkes in his co-authored book *Prehistoric Britain* which was published towards the middle of the century (first edition: Hawkes & Hawkes 1943; revised and expanded edition: 1947). They typify the reluctance of British scholars to adopt Montelius's scheme. The contrasts between their chronologies are puzzling, yet the views put forward in 1947 probably represent the consensus among the scholars of the time and were summarized in a book intended for a general audience. It is important to recognize that Hawkes's preferred chronology was adopted long before radiocarbon dates became available. That means that it must have been worked out according to the same procedures as Montelius had employed forty years before him.

At first sight the discrepancies are astonishing. Their estimates for the Bell Beaker period differ by six hundred years, and the 'Deverel Rimbury Culture' of Hawkes's account is attributed to a period seven centuries later than Montelius's date for what is essentially the same material. In every case Hawkes employs a shorter chronology than his predecessor, and all his estimates are

Table 1 Montelius's periodization of the British Bronze Age, compared with Christopher Hawkes's dates for comparable material as set out in the mid twentieth century. Hawkes's scheme is somewhat impressionistic, but the differences between the two chronologies are between 150 and 700 years. Hawkes's dates are from the revised edition of his co-authored book (Hawkes & Hawkes 1947: viii)

	Montelius (1908)	Hawkes (1947)	Discrepancy
Period 1	2500 – 2000 BC	1900 – 1800 BC	600 years
Period 2	2000 – 1700 BC	1700– 1400 BC	300 years
Period 3	1700 – 1450 BC	1400 –1000 BC	300 years
Period 4	1450 – 1150 BC	750 - 500 BC	700 years
Period 5	1150 – 800 BC	1000 - 750 BC	150 years
Iron Age	From 800 BC	From 500 BC	300 years

Table 2 Christopher Hawkes's chronology for the British Bronze Age as he expressed it in 1947, compared with current dates for comparable material. Note that an exact synchronism is not possible because of detailed changes of chronology, but these estimates suggest that the differences between his scheme and the dates that are favoured today are between 100 and 500 years

	Hawkes (1947)	Current estimates	Discrepancy
Period 1	1900 – 1800 BC	2400 - 2000 BC	500 years
Period 2	1700– 1400 BC	2000 –1800 BC	300 years
Period 3	1400 –1000 BC	1800 –1500 BC	400 years
Period 4	750 - 500 BC	1500 –1100 BC	350 years
Period 5	1000 - 750 BC	1100 – 800 BC	100 years
Iron Age	From 500 BC	From 800 BC	300 years

significantly later than those suggested in 1908. These contrasts are especially significant as Hawkes was probably the most influential Bronze Age scholar in Britain. Like Montelius, he possessed an unrivalled knowledge of Continental material.

One of the errors in Hawkes's scheme was soon corrected, using the same method as Montelius himself had used. Two of Gordon Childe's students, Jay Butler and Isobel Smith, compared the associations of British material that had been attributed to the Late Bronze Age with the established sequence in Northern Europe (Butler & Smith 1956; Smith 1961). Their work showed that, far from dating to the end of the Late Bronze Age around 750 BC, it originated in the Middle Bronze Age over seven centuries before. Radiocarbon dates have confirmed their analysis.

Radiocarbon dating has also established the true age of some of the other phenomena considered in Hawkes's scheme. Table 2 presents the current estimates and compares them with the chronology that he suggested in 1947.

It is fair to add that Hawkes adopted a different approach in later life, but by then his work was influenced, not only by the research of Butler and Smith, but also by radiocarbon dates. Unfortunately, his revised chronology for the period was never published.

Having compared Hawkes's chronology with current estimates, it is time to return to the scheme proposed by Montelius to see how it fares today (Table 3). In contrast to the sequence favoured in the middle of the last century, the differences are never more than a hundred years.

That raises an important question. Why was his chronology basically correct, and why did the work of those who rejected his ideas prove to be so misleading?

The main aim of Montelius's study was to establish a sound chronology for the British Bronze Age. It was based on close

comparison between insular artefacts and those in other parts of Europe. It was also possible to calibrate his sequence through the method known as cross dating. He was content to observe the similarities and differences between local typologies and to bring them together in a chronological structure that would cover large parts of Europe. He was less interested in the mechanisms by which these connections had been formed.

British scholars like Gordon Childe, Stuart Piggott and Christopher Hawkes had another objective in mind. In their different ways they were looking for ways of writing a historical narrative. This had two main characteristics. The first was a process of diffusion, by which ideas spread gradually from one society to another. Some might have been adopted, whilst others were rejected. The islands of Britain and Ireland were located on the outer margin of Europe, and so it was reasonable to suppose that they would have been among the last regions to be exposed to innovations that had developed in other areas. This encouraged the idea that insular chronologies would be comparatively short; for ideas must have taken a long time to reach such regions.

At the same time, the appearance of those ideas was all too readily attributed to migration from overseas, so that in 1948 Hawkes and Piggott postulated a whole series of invasions whose reality was accepted without question. In the Early Bronze Age they included four different groups of 'Beaker folk', the 'Food-vessel peoples', 'invaders centred in Wessex', and the 'Urn folk'. They were followed by in the Late Bronze Age 'settlers from northern France'; 'invaders from Holland and ... the Lower Rhine', invaders 'from the West Alpine region', ... [and others] 'from the north-western fringe of the Hallstatt civilization' (Hawkes & Piggott 1948; all these quotations come from Chapter 4). It was these events that punctuated the sequence published by Hawkes in 1947.

This is apparent from the chronological chart with which *Prehistoric Britain* begins. Where Montelius had subdivided the

Table 3 Montelius's periodization of the British Bronze Age, compared with current dates for comparable material. Note that an exact synchronism is not possible because of detailed changes of chronology, but these estimates suggest that the differences between his scheme and the dates that are favoured today are between about 50 and 100 years.

	<i>Montelius (1908)</i>	<i>Current estimates</i>	<i>Discrepancy</i>
Period 1	2500 – 2000 BC	2400 – 2000 BC	100 years
Period 2	2000 – 1700 BC	2000 – 1800 BC	100 years
Period 3	1700 – 1450 BC	1800 – 1500 BC	50 years
Period 4	1450 – 1150 BC	1500 – 1100 BC	50 years
Period 5	1150 – 800 BC	1100 – 800 BC	50 years

British Bronze Age into five *periods*, Hawkes and many of his contemporaries organized the Bronze Age sequence according to a series of hypothetical *events*: the 'Beaker invasions', a 'Wessex invasion', the 'rise of [the] Urn people', and the 'Deverel Rimbury invasions' (Hawkes & Hawkes 1947: viii). There was little evidence to support these interpretations, and, apart from the adoption of Bell Beakers, none of them plays any part in contemporary archaeology.

It is important to appreciate how these ideas influenced the chronology of the British Bronze Age. For Montelius the archaeological record could be divided into five periods of approximately equal length. For Hawkes and his contemporaries the same empirical evidence – however it was dated – could be compressed into a series of brief episodes of migration from parts of Continental Europe (or from other regions of the British Isles). Each had recognizable consequences which lasted until the next period of change. The best way of explaining the close relationship between insular material culture and the artefacts found on the Continent was by postulating periods of settlement from overseas. It follows that these cultural systems must have been fully formed *before* their elements were introduced by migrants to Britain and Ireland. Even then the diffusionist framework encouraged insular prehistorians to suppose that it would have taken a while before new ideas were accepted. As a result it is not surprising that these scholars favoured a shorter chronology than Montelius, and yet the fact remains that his scheme has stood the test of time. Why is this?

The implication of this discussion is that his chronology was essentially correct and that he was right to date the material culture of the insular Bronze Age by comparison with the artefact types that were used in other parts of Europe. The 'time lag' invoked by the diffusionist framework is not in evidence, nor are most of the sudden events implied by the invasion hypothesis. *Changes in the material culture of Bronze Age Britain proceeded in step with developments on the European mainland*. Thus the British Isles were not remote outposts of the Continent, but were closely integrated into a larger pattern of technological innovation and exchange. They were in regular contact with people on the European mainland, and any sense of isolation is an artefact of mid twentieth century scholarship.

The rehabilitation of a century-old chronology places a new emphasis on the significance of long distance communications between different regions of Europe. They cut across many of the local differences that have been identified in recent years and encourage prehistorians to work on a larger geographical scale. It was the scale at which Montelius conducted his research, and his study of Bronze Age Britain is no exception

That lesson has never been neglected by Scandinavian archaeologists. Kristian, our travelling chief, is another traveller through time.

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ANTIQUARIANISM RECONSIDERED: SEMI-PROFESSIONAL ANTIQUARIANS AND ANTIQUARIAN FIELD PRACTICE IN SWEDEN IN THE SIXTEENTH AND EARLY SEVENTEENTH CENTURIES

Ola Wolfhechel Jensen and Åsa Jensen

Abstract: Antiquarianism is often understood in a stereotypical sense and in contrast to modern archaeology. In line with this, early antiquarians are portrayed as disorganized autodidactic dilettantes, as generalists whose interest in past material culture was a sideline based simply on personal curiosity. The aim of our paper is to nuance the concept and our understanding of antiquarianism by taking antiquarians and their field practice in Sweden in the sixteenth and early seventeenth centuries as examples. We will argue that it is more appropriate to define the Swedish situation as semi-professional, as antiquarian work was both officially organized and institutionalized, and also to a certain degree specialized and based on formal education.

Keywords: Antiquarianism, field practice, professionalism, semi-professionalism, sixteenth and seventeenth centuries

Introduction

Antiquarianism is habitually defined in contrast to modern, chiefly European, archaeology as it was developed in the course of the nineteenth century. It follows that 'pre-archaeological' antiquarians were autodidacts, non-professional amateurs and dilettantes (e.g. Daniel 1976; Trigger 1987). Their interest in the past and its material culture was normally a sideline and based on mere curiosity, and antiquarian fieldwork was seldom organized in an official way. Furthermore, they were not specialists but generalists, making use of almost any source involving the past, such as old manuscripts, sagas, oral traditions and ethnological information, as well as material objects and monuments in the form of coins, arms, ruins and old graves. Chained by the written tradition, and hence to a firm belief in the words of older authoritative authors, ancient material culture was mainly of illustrative value, and might therefore augment the words of the Bible, Classical ancient texts and Old Norse literature, etc.

In the nineteenth century, antiquarianism mutated and split into various academic fields such as archaeology, ethnology, philology and history of art, architecture and literature (cf. Murray 2007). This era saw the emergence of full-time professional archaeologists, specializing in past material culture. The process of professionalization was promoted by archaeology becoming a recognized discipline and incorporated into higher education at the universities. As *connoisseurs* of the ancient past, archaeologists were distinct from unprofessional stakeholders and also from adjacent specialists dealing with aspects of the past. In short, with the nineteenth century archaeology became a well-defined, autonomous field of knowledge with its own norms and rules for how to understand conditions in the past.

In a general sense this dichotomized understanding of antiquarianism and archaeology can be said to be valid. However, when taking a closer look you will soon find exceptions indicating that antiquarianism was far more complex and heterogeneous than is normally understood. Recently, Tim Murray presented an article

challenging the simplistic view on antiquarianism by highlighting antiquarian methodological issues in sixteenth-century Britain (Murray 2007). The subject of our article also necessitates taking a more nuanced and complex perspective; Swedish antiquarianism cannot be understood without stressing the complexity of organizational, institutional and educational issues.

In the mid 1660s an antiquarian college, the *Collegium antiquitatum*, was established in order to promote the understanding of ancient Sweden and to ensure the care of ancient monuments in the landscape. It consisted of a group of men, mostly professors in Uppsala, and in an organizational sense the college was initially, albeit loosely, attached to Uppsala University. In 1667 each member received a directive specifying his domain. The tasks they were set were wide-ranging and vast, from studying the Gothic language and Old Norse literature using primary sources, to the history of law and the church; from runestones and burials, both heathen and Christian, to the genealogy of nobility, urban history, old forts and castles (Gillberg & Jensen 2012; Schück 1933:1-75).

The college was founded by Chancellor Magnus Gabriel De la Gardie and by Johan Hadorph, who later became the *antiquarius regni*. From the outset, Hadorph was the executive force, and he was responsible for moving the college to Stockholm. He had one registrar, a few Icelandic translators, four assistants, two draughtsmen and one wood carver. In line with his responsibilities, Hadorph travelled extensively and documented, restored and even conducted excavations of ancient monuments. He was also the brain behind the first Ancient Monument Act of 1666 and the one who organized the nationwide inventory of ancient monuments conducted mainly by the local priests in the 1660s-1690s (Schück 1933:343-464).

Hence, much of what we commonly associate with modern professional archaeology was already represented in Sweden in the late seventeenth century: institutions and organizations, salaried employees and specialists, the printing of specialized

literature and theses, higher education at Uppsala University and the establishment of a head of antiquarian studies at the same university. Johan Hadorph even suggested, in a draft of the Ancient Monument Act, that only established antiquarians should be permitted to excavate monuments; the proposal was however abandoned (Gillberg & Jensen 2012:120).

This article will not deal with Swedish antiquarianism during this era. Instead it will focus on the previous period, the preceding hundred years or so, aiming to illustrate and elucidate both the complexity of antiquarianism and the roots from which a full-scale antiquarian tradition later grew. The purpose is also to shed light on antiquarian practice at the time: how was it organized and learned, and how was fieldwork carried out?

The dawn of Swedish antiquarianism

An increase in interest in the past and its monuments does not automatically generate organized work on antiquarian issues. However, and as in many other European countries, a certain concern about antiquities and the care of old monuments can be discerned in Sweden in the sixteenth century. The Renaissance king, Johan III, is known for his great passion for old buildings, especially medieval ones, which was due to his interest in architecture and his firm belief in Catholicism in a time when Protestantism had severely reduced and destroyed much of its material culture. In the 1570-90s, he personally organized the restorations of decaying monasteries, churches and old castles, and also forbade the further destruction of old ruins (Jensen 2006:19).

In line with his preservation strategy Johan III also ordered the construction of a shed to protect an important national monument associated with the election of ancient kings, *Mora Stenar*, close to Uppsala. In 1586 the historian and royal genealogist Rasmus Ludvigsson embarked on a mission to document the stones. One in particular captured his attention since it had an engraving of three crowns, a symbol that both Sweden and Denmark claimed for their national coat of arms. This had resulted in a protracted conflict between Sweden and Denmark on the right to use it (Jensen 2002:184). Indeed, the issue engaged Swedish antiquarians during the whole of the seventeenth century and to some extent even in the centuries after. To legitimize the Swedish claim to the symbol, Ludvigsson organized the search for antiquities and monuments embellished with the three crowns. In addition to *Mora Stenar*, it was documented on old manuscripts, buildings and above all on old coins (Jensen 2002:184).

Apart from Ludvigsson's focused search for old relics, which was obviously motivated by political reasons, the antiquarian work conducted during the sixteenth century was primarily based on personal and patriotic interests. One figure of interest in this respect was the Bishop of Uppsala, Olaus Magnus. He was an experienced traveller who, during his often very extensive journeys, was eager to note not only geographical and ethnographic conditions but also ancient monuments, such as stone-settings, megaliths, ancient castles and especially runestones (Jensen 2002:176-183; Schnapp 1996:157-159). In 1555 his experiences were presented in his comprehensive book, *The History of the Nordic People*. It was printed in Rome, where he and his brother, Archbishop Johannes Magnus, spent the rest of their lives in exile due to the forces of the Reformation. Among their religious opponents was the great reformer of the Swedish church, Olaus Petri, who also had a certain interest in antiquities and monuments, most notably coins and runes; the interest in runes was shared by his brother, Laurentius Petri (Jensen 2002:183-184).

The antiquarians become organized

The reign of King Gustav II Adolf (1611-1632) of Sweden was characterized by a massive restructuring of the state administration leading to the foundation of several civil service departments and learned institutions (Lindquist & Sjöberg 2008). Among them was the National Archives where the famous antiquarian Johannes Bureus worked. Since the 1590s he had been interested in antiquarian studies with a special focus on runestones. Among other things, he had the ambition of publishing drawings and transcripts of all such stones in the country (Schück 1932).

In 1628 the king ordered the archbishop to circulate an enquiry among the ministry of his diocese asking for assistance. In this context Bureus came in contact with a vicar, Martin Aschaneus, who took the enquiry seriously because of his personal interest, and had collected rune staves and calendars which were presented to Bureus. Subsequently, an effort was made to organize and formalize the study of antiquities, and Bureus received assistants in Aschaneus and his son-in-law, Johan Henricsson (later dubbed Axehiell). Out of this, and in combination with the administrative reorganization, came a royal decree for the antiquaries 20 May 1630.

The royal decree was swiftly in operation, but despite individual efforts it was a modest beginning. Since the work was not well paid many of these early antiquaries soon left for more profitable careers. Axehiell was shortly replaced by Johannes Rhezelius, who learned the trade as a pupil of Aschaneus. Soon, though, both Rhezelius and his successor, Per Olai Westhius, found more lucrative work, and when Aschaneus died in 1641 Bureus himself was all that remained of these early antiquarians. He was then an old man in his eighties, plagued by gout, and worried about the future for this line of work. A call of distress to the government granted him a few students who were to study at Uppsala University from Michaelmas to May and then travel around the country collecting old documents in the summer. Their collections should then be handed over to Bureus. Since these students would have more to do than others, they were to receive a larger scholarship.

It was not long, however, before Bureus was confined to his bed due to illness and old age – he died in 1652. After Bureus' active days there was a string of successors who received the title '*antiquarius regni*', but for a variety of reasons not much antiquarian work was accomplished over the next few years; as was outlined above, the 1660s saw a new era of Swedish state-funded antiquarianism.

Education and economic prerequisites

Where and how did the antiquarians learn all the necessary skills: reading and interpreting runes, drawing and mapping? It was not an uncommon skill among the educated to be able to read runes since slightly different runic alphabets were used, in some cases as late as in the nineteenth century. The Petri brothers each wrote a short thesis on rune reading and interpretation, and it is a noticeable feature in the writings of the Magnus brothers as well. They even published a rune alphabet with Latin letters, a Rosetta Stone of sorts (Jensen 2002:183).

Two of the main characters seem to have been autodidacts in reading runic inscriptions as well as in other antiquarian attainments. Bureus had great language skills; he studied Greek, and taught himself Hebrew. He also taught himself runes by

decoding a runestone in the door of the Franciscan monastery in Stockholm in 1594, and he frequently referred to the manuscript of Laurentius Petri. Among his contemporaries he was known as a skilled draughtsman, and since he does not seem to have had a predecessor, he probably tried different approaches to surveying and documentation until he established his preferences. The other self-taught antiquarian, Aschaneus, had completed a description of the monuments in Uppland long before he met Bureus (Aschaneus in Gihl 1925). There he proved his skills in reading runes, drawing, surveying and documentation, which was the main reason he was recruited as an antiquary in the first place. We might assume that such skills and antiquarian tastes were not all that rare among scholars.

A not uncommon feature of the seventeenth-century civil service was to educate your own co-workers and successors. Bureus' ambition was to document and publish every runestone in Sweden and therefore he needed a staff of his own. He anticipated an official order to this effect and started teaching a few disciples privately in the 1620s, among them Johan Axehiell. He accompanied Bureus on several journeys and hence received at least some of his education in the field. Bureus also recruited Aschaneus, who according to his instructions took a couple of pupils of his own, among them Johannes Rhezelius (Gillberg & Jensen 2012:120). The education took place in Aschaneus' vicarage and lasted for four years. Knowledge of antiquities, the art of runes and drawing are explicitly mentioned. Aschaneus wrote a sort of diploma for another of his pupils, Petri Olai Westius, certifying his ability to perform the 'difficult and laborious' duties of an antiquary after receiving a two-year education (Schück 1932:164).

The crown had long nurtured plans to formalize the discipline by creating a chair in runes or antiquities. Both Karl IX and Gustav II Adolf wanted Bureus as professor, but for different reasons nothing came of this until 1662, when Olof Verelius became the only holder of the Chair of Antiquarian Studies. Bureus still taught pupils, though, and in 1647 managed to acquire scholarships for two of them of whom one even passed a formal exam in the antiquities in the presence of the university council, probably for the then 80-year-old Bureus (Schück 1932). Aside from studying, one of their main tasks was to travel around the nation during the summer and collect information for Bureus.

As the antiquaries had official duties to perform, they were also salaried. Bureus worked at the Government Offices and received his salary from there, and for his travels he received a form of subsistence allowance (Schück 1932:121). That this was not adequate is apparent from his complaints. Aschaneus had his vicarage, but as compensation for his antiquarian duties he received tax relief; this sum was supposed to cover not only his own expenses but food, clothing, lodging and equipment for his students. In reality, Aschaneus worked almost for free. Axehiell, and later Rhezelius, both had salaries. On top of this, some antiquarians had other privileges, like free transportation and food during their travels (Schück 1932:163). Still, this was not enough to make a living and it seems that generally speaking antiquarian skills were not highly valued. Both Axehiell and Rhezelius later abandoned such careers to pursue better paid and more prestigious posts, but when the former was called to become National Antiquarian in 1652 he received a reasonably high salary, hinting that this office had become more accepted during his absence.

The art of travelling

The work of antiquarians demanded travel across the nation. Without a passport from the proper authorities one was not allowed to leave home for a lengthy journey. In wartime, one might be taken for a spy, and not having a specified purpose could arouse suspicion. To get a passport, one had to contact the local authorities. The purpose of the travel was stated in these documents and only especially trustworthy individuals received unspecified passports allowing travel nationwide and for different reasons. The antiquarians all had passports issued by the crown. On 20 August 1599, Johannes Bureus received his passport signed by Duke Karl, which allowed him to travel the entire nation for a specific purpose: to document runestones (Bureus 1886). The passports not only allowed an individual to travel, but also stipulated other rights and privileges. Rhezelius was given free transportation both on land and water as well as free meals and beer.

The best and most comfortable way to travel in sixteenth- and seventeenth-century Sweden would have been during winter, when a horse and sleigh provided the shortest way to one's destination, across frozen lakes and rivers and without having to follow any roads (Englund 1993:313-320). Unfortunately for our antiquarians, winter was not the most favourable season to undertake landscape surveys for ancient monuments. As will become apparent, their journeys mostly occurred during spring, late summer and early autumn, and they probably rode. Carriages were uncommon in Sweden until the seventeenth century (Löfgren, Bergreen & Hastrup 1992). The roads of the sixteenth century would have been more like paths winding their way through forests and between fields, but preferably placed on easily drained natural ridges where possible. By the 1530s, King Gustav Vasa had already attempted to make at least the main roads broad and even enough to allow travel by carriage (Mörner 2001:255-256). Road building on a larger systematic scale started in the 1620s, inspired by the need to quickly move armies and supplies during the Thirty Years War (1618-1648), and the marching on German roads emphasized the neglect of the Swedish ones (Åberg 1991). According to the testimonies of foreign travellers, the standards were not so bad a couple of decades later (Englund 1993:317).

One also had to sleep and eat somewhere on a journey. Before the Reformation, the Catholic infrastructure would have provided established itineraries, and food and lodgings would have been found in convents. When travelling became more common it became quite a burden for anyone unfortunate enough to live along the main roads as one was bound by this to supply horses, sleighs, boats, food and manpower to drive. Since it primarily impacted local farmers it jeopardized the planting and reaping of the crops, and ultimately led to the abandonment of farms. This was already a problem in the days of Gustav Vasa, and in order to resolve the situation a proclamation was issued in 1649 to have inns fulfil these functions instead (Ernvik 1974). It was decreed that these establishments should lie two miles apart along the roads, and their fees and services (number of horses, wagons, cart, sledges, etc.) and rooms were to be regulated in detail.

Travelling in those days was very different in several respects. To begin with, it was usually very slow, and company was preferred over travelling alone, not only for diversion but also as protection against the many dangers of travelling at the time. Olaus Magnus recounted several of these when travelling in the north: the risk of being thought a spy, the harsh climate, highwaymen and wild animals, accidents, bad roads and difficult fjords. Going over

water meant passing deep places in strong winds when sailing (Magnus 2001). Regular maps were rare, even guarded secrets of the crown, and ordinary travellers relied on itineraries instead. These contained information on how to reach a certain place, and were a combination of geographical and chronological guidelines. Most travellers departing from familiar territory kept their own diary with such information.

To conduct fieldwork

At a time when antiquarian studies were based more on historical sources than on artefacts or monuments it would not have been necessary to leave your study chamber to perform your duties. Runestones were special in this respect; one could read and study them, but for the most part they could not be brought back to a desk. One had to move around in the landscape to access the study material.

In the first official work description of Swedish antiquarians, the royal decree of 1630, the antiquarians were given a vast task. Not only were they to seek out and collect all ancient things (especially rune staves, coins and all sorts of documents) and information about monuments, but also to describe the landscape, produce maps, make notes on the roads, measure the land for tax purposes, collect medical books, collect the names of tools, herbs and animals, write down old customs and stories, find metal ore in the mountains, note the distribution of wild animals and finally to report on the mental constitution of inhabitants in different parts of the nation. This work and the knowledge of how to do it were considered so valuable that the subject's primary figure, Bureus, was not allowed to go abroad. His knowledge could not be risked by undertaking dangerous travel (Schück 1932).

Special mention is made of the runestones. They were to be documented and described whether they were broken or whole, their condition noted as well as the total number in each parish. Local stories or legends that concerned them as well as other monuments should also be written down. Churches should be inventoried and any old documents, calendars, books, chronicles and letters had to be copied.

But how were the antiquarians supposed to perform their work of surveying and documenting in practice? The information given in the official documents is indeed sparse. The antiquarians had to ask around for information, write down descriptions and make drawings as well as copies of older documents, coins and inscriptions. Any fallen runestones were to be raised, which is the only task relating to preservation that they were given (Schück 1932:145). But what, exactly, should the descriptions contain? What information should be emphasized in their drawings? In our search for information on these topics, we scoured the archives to discover what was written down and drawn by the antiquarians in their notebooks and diaries (such as Fa 5, 10:1-2, 12 KB, Fb 17-22 KB, Fc 2-5 KB, S 136 UUB, but also Aschaneus in Gihl 1925; Bureus 1883, 1884, 1886; Rhezelius 1917; see also Jensen 2002:247-248).

The authorization given to Rhezelius stated that he should travel in summer and present his results in the Government Offices during winter. He executed his journey to the island of Öland and the mainland area of Kalmar between July and September in 1634. Over the subsequent three years he made similar investigations in Uppland, although on these occasions he began his work in August/September and finished in October/November – maybe he

had learned a lesson from his previous journey to avoid the heat of the sun and the dusty roads in the height of summer.

Due to their existing financial situations, the antiquaries could not systematically tour the country in search of material. Bureus, for example, brought his drawing tools and notebooks along on every journey he was sent on. Accordingly, his documentation followed the geographical spread of his politically-determined travels rather than any preconceived systematic plan of surveying. Others, like Aschaneus and Rhezelius, had the chance to work parish by parish. If you take them all together, though, it seems some attempt at work division was made, at least in the beginning. This is true especially in Uppland, the county closest to Stockholm, where Rhezelius concentrated on the northern parts, Bureus on the area around Uppsala, Aschaneus on the areas south and south-east where he was vicar, Axehiell the south, and his colleague Caspar Cohl the western parts (Svårdström 1936:28).

The notebooks and field drawings that Rhezelius produced on his Öland trip allow us to reconstruct his strategy. He started with the parish church, describing and drawing it, and then moved on to document medieval burials with inscriptions and any heraldic evidence. All coats-of-arms were carefully drawn. He asked around for information on old books, documents and any ancient monuments, all of which he subsequently documented. Each parish took one or two days to finish.

How to document a monument

The monuments most frequently mentioned in the archive material are, as can be expected, runestones. At the centre of the documentation were the runes and the ornamentation, and in certain respects all antiquarians seems to have gone about it the same way. Bureus began his work by carefully cleaning the stones of moss, lichen and dirt in order to improve the visibility of the features mentioned above. Judging by his documentation, it is likely that Bureus also used squared graph paper, and that he hence marked the runestones with similar squares, in order to get the exact dimension of their size and details – in this way the documentation was made by using a particular scale (see Gillberg & Jensen 2007:26, note 8). His notebooks show that he preferred to document during the hours around midday when the position of the sun made the runes appear clearly as the shadows deepened in the carved letters. He would note the necessary information, like parish and county as well as the more exact location of the stone, for example a certain distance from the church. Sometimes he mentioned damage to the stone, its size or if it was built into a church wall or a bridge foundation. It took him one to two hours to complete the documentation of each stone.

Aschaneus and his pupil Rhezelius did much the same, according to the sources, but added some details and were in general more systematic in their approach. They always noted the size in height and width, colour, location and readability of the inscription. Other information they found worth noting was whether or not the stones had been relocated, and at which point of the compass the inscription faced. Aschaneus believed that the direction of the runes marked certain facts. If the text faced east, for example, the person in whose honour it had been erected had died in the morning.

Some information was passed along in the drawings themselves rather than in the accompanying notes, for example the exact location and extent of damage. The drawing techniques were much the same, and the drawings were made in a style that made

them excellent prototypes for copperplate engravings and woodcuts. They all use shading to mark the sides of the stones, but whereas Bureus did this a lot Aschaneus and Rhezelius were more economical. On the other hand, their drawings had a tendency to be more detailed than those of Bureus (see also Magnusson 1980). The documentation of other kinds of monuments was executed according to particular standards as well. Legends and recurring names related to them were noted on a regular basis. Aschaneus' view of the matter concerning barrows was that different names indicated different use, and, accordingly, that barrows were not used as graves only. He theorized that they may also have had a function during feasts such as divine services, religious sacrifices and marriages (Aschaneus in Gihl 1925).

Different types of monuments were, not unexpectedly, portrayed and measured in slightly different ways. Memorial stones were documented in the same manner as runestones. Barrows, cairns, stone-settings and ruins of buildings, on the other hand, were usually portrayed from an angle or straight from above, with the purpose of visualizing their shape, size and extent. The size of barrows and cairns was seldom noted, whereas the formations of the stone-settings were often measured. Olaus Magnus' measurement of stone-settings revealed that their length differed between 10-30 feet and their width was between 4-6 feet. He also assumed that variations in shape indicated different meanings in the past. The symbolic meaning of a circular stone-setting, for example, was that it was a grave of relatives, whereas a square form signified a troop of warriors on horses (Magnus 2001:66-67).

Tools, standardization and embodied knowledge

The differences between the antiquarians are evident in their documentation of monuments other than runestones as well. In Bureus' notebooks there are only a few examples of barrows, stone-settings and megaliths, while Aschaneus and Rhezelius devoted more energy to such features. The pair of them often described grave-fields, and more often saw monuments in context rather than as single features (Fb 18 KB). Since the documentary styles and content of Aschaneus and Rhezelius are very alike it is safe to assume that this was part of the training the latter received from the former. They used the same shorthand for the same concepts as well as the same terms for measuring. This is a very early example of how practice was transferred from one person to another, not through theoretical studies but by practice in action.

Field archaeology can be described as a craft and many of our skills performed during work are corporeally situated. The body is in fact the oldest tool used when measuring ancient monuments in the landscape. Two sets of measurements had the human body as its point of departure. One of the foundations for this was the thought that a normal body had certain proportions; one ell (the distance from the top of the middle finger to the elbow) was 2 feet (from big toe to heel). These measures could then be divided into quarters, hand breadths and finger breadths. Olaus Magnus, for example, notoriously described the size of monuments by referring to a man's length and foot whilst the proportions of the runes on runestones were illustrated by referring to the size of a finger. The other set was defined not from the body itself but from its capacity. For example distance between different monuments and their location in the landscape could be measured in stone's throws, or the distance one could throw an axe or shoot an arrow or a musket bullet (Löfgren, Bergreen & Hastrup 1992).

The tools of the trade were generally very common items: steel nibs and ink, pencils, notebooks and paper. The absence of any

technology is striking, and the only hint of any equipment would be a compass. That there were more technical tools available, and that at least one of the antiquaries had knowledge of them, is certain. The National Land Survey was one of many Government Offices initiated during the first decades of the seventeenth century. Its first official was Bureus' cousin, Anders Bureus, who received the order to educate surveyors for the nation. Their skills were also more technical, and among their equipment was the astrolabium, one of the first levelling instruments for measuring heights and distances. On his journey to Norrland, Johannes Bureus brought such an instrument on his journey, not for the measurement of monuments but for proper fixation of the Polar Circle. In their instructions for the geographical mapping of Sweden from 1643, the surveyors were also ordered to document ancient monuments and to illustrate them on the maps. Examples from the later part of the seventeenth century even prove that cooperation between antiquarians and land-surveyors existed in the production of maps illustrating monuments in the landscape (Jensen 2006).

A perusal of the source material reveals certain standards of proceedings which tally with the instructions put forward by the Dane, Ole Worm. In 1638 Worm enclosed instructions to the Bishop of Stavanger in Norway on how to document within the framework of his nationwide survey (see Klindt-Jensen 1975:15). In addition to topographical notes, the county and parish in which the monument was located, Worm stressed that the information should cover features like the orientation and dimensions of the monument, its length, breadth and thickness. The documentation should also include a drawing as well as local stories and the investigator's own interpretation of the monument. Hence, and to conclude, the similarities between Worms' instruction and the information given by the Swedish antiquarians imply that a certain formalized standard of documentation had already been established during the early era of antiquarianism.

Conclusions

In this article we have scrutinized Swedish antiquarianism during the late sixteenth and early seventeenth centuries in order to exemplify its complexity and how the antiquarians actually conducted their work in the field. In some respects the Swedish situation tallies with the general view of antiquarianism: for example, in some sense they were generalists making use of various sources in the interpretation of the ancient past. They also had a firm belief in the written tradition, which was why they collected and translated old manuscripts, but it also stimulated their immense interest in runestones since they were in fact texts believed to have been carved by their ancient ancestors.

However, there are also features which clearly do not fit the general view of antiquarianism. As early as the 1630s an organization, as well as an institution, with semi-professional antiquarians emerged, and this was attached to the royal council and its archive. Previously, Johannes Bureus conducted inventories sanctioned by the state. Since runestones were undoubtedly at the centre of the antiquarians' attention, it is fair to say that they were in some sense specialists. Furthermore, in contrast to the pioneers (Bureus and Aschaneus), the successors were not self-taught, but formally trained and educated in antiquarian subjects, either by other practicing antiquarians or at the university. With a chair of Antiquarian Studies came pupils, hence an institutionalized form of education in antiquarian issues.

The institutionalization and centralization of antiquarianism led naturally to a certain formalization of antiquarian knowledge

and practice. In this article we have focused on the latter by describing the conditions and prerequisites that enabled antiquarian work in the first place, such as the necessity of having formal documents and passports that ensured a safe journey, the accurate transportation facilities as well as access to essential accommodation and supplies. The formalization also implied a certain standardization of antiquarian practice in the form of documentation and measurement. The fact that Worm, but apparently not the Swedish antiquarians, felt the need to write detailed instructions on how to document ancient monuments indicates that the fundamentals of antiquarian field practice were already in place, and that these were recognized by the latter. Nevertheless, to define Swedish antiquarianism at the time as professional is not sufficient. What we have to recognize is that when the process of professionalization began centuries later it owed much to what antiquarians had conducted in the previous period. Hence, to grasp the way modern archaeology has evolved we have to understand the complexity of antiquarianism.

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VISITING MUSEUMS - A PERSONAL STORY

Lise Bender Jørgensen

Abstract: During a dinner party at Kristian and Lotte's some years ago, the talk turned to travel and visiting museums travelling to visit museums, the pivotal role of museums in archaeology, how archaeologists work their collections, and problems of accessibility. The participants all had opinions on this, and personal histories that reflected various types of experience. Those who had the most stories to tell were Kristian and myself, as we had both travelled extensively, carrying out museum studies while collecting data for our research, and towards the end of the meal it was suggested that the two of us should write a paper about visiting museums. Everybody thought it was an excellent idea, but we never got around to doing it. The current paper attempts to recapture and convey some of the spirit of that evening.

Keywords: Museums, Travelling, Archives, Collections and stores, Accessibility, Europe, Iron Curtain, Archaeology

Introduction

Travelling and visiting museums has a long history in archaeology, with roots going back to the antiquaries of the sixteenth and seventeenth centuries (Schnapp 1996: 140, 153f). Travelling was an important part of the education of the early Scandinavian archaeologists. One of the founding fathers of Scandinavian archaeology, J.J.A. Worsaae, travelled extensively as a young man, first to see antiquarian collections in Sweden and Norway, then in Germany and Austria, and in 1846-47 he went on a journey to Great Britain, Ireland and France (Worsaae 1934, Jensen 2007). At 19, Hans Hildebrandt went on a grand tour to important European museums, accompanied by his father (Baudou 2004: 159); Oscar Montelius also travelled extensively, becoming the first to investigate the prehistory of Europe on a continental scale (Klindt-Jensen 1975: 85, Trigger 2006: 224). Prominent Scandinavian scholars of the early twentieth century went on journeys that lasted several years and gave them comprehensive insights into the archaeology of Europe (Baudou 2004: 201, Høilund Nielsen & Kristoffersen 2002: 19). The World Wars and the depression of the 1930s led to a decrease in travelling. C.J. Becker, who took his degree at the University of Copenhagen in 1939, would have supplemented his education with foreign travel, but it was impossible during the war and in the years immediately after. From 1947 onwards, he travelled extensively to meet colleagues and view the material (Becker 1985: 178).¹ In recent years, this type of individual travel has become less common. This makes it worthwhile to take a closer look at the phenomenon. To do so I will draw upon my own experience.

The starting point - the National Museum in Copenhagen

The collections of the National Museum of Denmark in Copenhagen were a point of departure. As a student and young scholar, I spent long hours in the storerooms there, which were then in the cellars of the main building, *Prinsens Palais*, in the centre of Copenhagen. The stores were organised on principles of chronology, find category and topography, i.e. finds from Bronze Age graves were kept in one section, those from various phases of Iron Age burials in other sections, rooms or cupboards. Settlement finds from different periods each had their own sections, as did specific groups of artefacts, such as organic materials. Within each category, topography was the organizing principle. Following a

place name system, numbering every county, district and parish in Denmark, finds were packed and stored so that the visitor, starting with county 01, district 01, parish 01, could embark on a virtual archaeological journey through Denmark (Voss & Ørsnes 1961). For each parish, a further recording system (the *sognebeskrivelse*) lists and describes every archaeological find made since the dawn of archaeology in Denmark and is linked to detailed maps. This meant that it was – and still is – possible to catalogue any archaeological data from Denmark in a predetermined order, greatly facilitating comparisons across all kinds of studies.² Other ways to access the collections were through the boxes of index cards for different find categories that listed museum number and exact location (room, cupboard and shelf), the topographical archive and the museum ledgers. The archive and ledgers also supplied information on the context of each find, including when, how and where the object in question had been found, and by whom. Those days were long before the advent of computers, databases and other aspects of the digital world which today are taken for granted. Data were stored on paper, in the form of text, drawings and photographs, and as physical artefacts or samples. If you were looking for something that had not been noticed previously and entered in the index cards, the only way to find it was to look for yourself, rummaging through the storerooms, or laboriously working your way through archive and ledgers. Unlike the situation today, where you are expected to present a list of the artefacts you wish to study, complete with museum numbers, that was no problem. Even as students, we were trusted with the collections and to a great extent left to our own devices in storerooms and archives, equipped with rings of keys that unlocked almost every door in the Prehistoric Department, apart from places like the gold room where you had to be accompanied and watched by a curator. The keys, however, had to be checked out each morning, and handed back before the end of office hours. If anybody forgot, he/she was called back and reprimanded. Most of us had been introduced to archives and storerooms early in our studies while unpacking, cleaning and sorting artefacts brought back from excavations, and had acquired a basic knowledge of how they were organised, and how to conduct oneself when working there. As students, we were perceived and treated as junior colleagues, acting as assistants to the museum staff. In

¹ See Ørsnes 1986 for an account of a visit to war-scarred Poland in 1948.

² For an example of its use see Aner and Kersten 1973-. Danish finds are listed according to the placename system. The same applies to reports on activities in Danish Archaeology, published in *Arkæologiske udgravninger i Danmark* 1984-2005, accessible on <http://www.kulturarv.dk/publikationer/publikation/artikel/arkaeologiske-udgravninger-i-danmark/>

many ways this was an informal but efficient apprenticeship, transmitting museum practices. However, curators usually kept a watchful eye on new faces.

The informal, trusting attitude made it possible to get acquainted with the archaeological record in a way that few are able to do today. In my own case, it meant that I was able to search for remains of textiles that had been overlooked or disregarded by those who had described and recorded the items found in connection with them. It also meant that we had the chance to become deeply familiar with the artefacts, getting a physical sense of their appearance, proportions, feel, sheen, weight, and other aspects, both tangible and intangible. We were also able to detect subtle shifts and changes that indicated regional differences while working our way through the shelves, moving in a figurative sense from one end of the county to another or from one period to the next.

Going abroad

Growing up as an archaeologist in archives and stores of the National Museum instilled in us the expectation that this was the way all museums were organised, and that other countries, like Denmark, had National Museums with collections that were representative for the whole country, and a number of local museums. Those of us who ventured abroad quickly discovered that this was not necessarily so. My own first journeys were to Sweden and Norway. The situation in Sweden of the early 1980s resembled that of Denmark, with the *Statens Historiska Museum* in Stockholm in the role of National Museum. A limited number of regional museums had small collections, but it was not necessary to visit them to get a sustainable overview. In Norway, however, archaeological collections are distributed in five regional museums and it is necessary to visit all of them to get a representative overview. Neither country had a placename system for archaeological sites comparable to that in Denmark, so I had to find my own logic for the cataloguing of finds,³ but then they had something that Denmark did not: printed versions of the museum catalogues that meant that most of the costly time abroad could be spent in the storerooms, studying artefacts, rather than scrutinizing ledgers in archives.⁴ Later, further countries followed, with new challenges as to the principles of distribution and organisation of archaeological collections, including language difficulties. Reading ledgers or documents (especially when handwritten) proved a much greater challenge than I had envisaged, and I often had to rely on published works on the sites in question. During the years 1982-87 I visited almost 100 museums in 16 European countries.⁵ Wherever I went, the general attitude

to visiting scholars was more or less the same as in Denmark. Curators were welcoming and helpful, and at most places I was given full access to the stores, where I could scour the shelves for remains of textiles; at one museum I was even given the key to the building, and told to let myself out, and in, as I wished. Only once was I refused access.

Writing to Museums

Planning a study journey abroad included deciding which museum collections to visit, and writing letters to inform them of my plans, what I wanted to see, and when I intended to come. In the days before the internet, this meant consulting handbooks on museums in Europe, as well as colleagues who had travelled and had international networks. What I was looking for was national and regional museums. I wanted to establish an overview of textile finds in Northern Europe from the beginning to the end of the first millennium AD, and needed to investigate collections that were representative for larger areas.

Letter-writing was a bit of a challenge, especially when planning a trip outside Scandinavia. Formal letters to institutions such as national or regional museums is a genre, complicated by the fact that different languages also imply different cultural traditions. These mainly have to do with salutations, i.e. how to begin and conclude a letter. Within Scandinavia, I usually could direct my letter to an individual, beginning 'Kære [NN]' and end it 'med venlig hilsen', comparable to 'Dear Sir/Madam' and 'yours sincerely' in English. In German it is 'Sehr geehrte Damen und Herren' and 'Hochachtungsvoll', in French 'Monsieur le Conservateur' and – to a Scandinavian – the rather flowerily 'Je vous prie d'accepter, Monsieur le Conservateur, l'expression de mes sentiments les plus distingués'. The body of the contents remained the same: that I planned to visit the museum in the near future, a brief introduction of my project and research questions, and a description of the type of data I was looking for and in which context I expected to find them. I also emphasized that I had already found several thousands of such textile remains in other museums. This was followed by the suggestion of the precise dates I wished to visit the museum, asking if that would suit the receiver. For the German letter, I enlisted help from a German friend; for the French, an entire class of Advanced French I attended was put to work.

Letters usually went out six to eight weeks before the start of a journey. A period of anxious waiting for replies followed. Usually, at least one museum did not reply in time. Non-replies were mostly those at the end of the journey, something that made me realize that curators looked at the suggested dates and assumed there was no rush. Accordingly I began to state the date of my departure from Denmark in the letters. I was not too keen to make phone calls to unknown people in foreign languages, and found that the best solution was to ask the curator in the first museum of a new country to contact any non-replying colleagues and ask if my letter had arrived. Only once the first museum on a journey had not replied when the day of departure grew near, and I had to call them to make sure they were expecting me. It was in the DDR, the Democratic Republic of Germany, at the time of the Iron Curtain, and several clicks could be heard on the line before a very surprised secretary answered the phone. Luckily, they had received my letter and all was well.

Behind the Iron Curtain

Travelling behind the Iron Curtain was a challenge, and one that

³ See Bender Jørgensen 1986: 232ff. The catalogues of Swedish and Norwegian finds are as far as possible organised according to the same principles as the Danish placename system, i.e. according to counties, districts and parishes. For Sweden, this is done alphabetically. For Norway, a number system of counties and municipalities was available. Starting in the south (Østfold) and ending in the north (Finnmark) it made it possible to establish a topographical logic similar to that of the Danish placename system.

⁴ Until about 1970 lists of acquisitions were printed in *Statens Historiska Museum och Myntkabinettet. Samlingarnas Tillväxt*. Stockholm, and in periodicals published by the five regional museums in Norway. For an overview of the latter, see Gjessing and Fett 1980. Today, this information is available in digital format. See <http://mis.historiska.se/mis/sok/sok.asp> (Statens Historiska Museum) and for Norway <http://www.unimus.no/arkeologi>

⁵ Denmark, Sweden, Norway, United Kingdom, Ireland, the Netherlands, the Federal Republic of Germany, the Democratic Republic of Germany (DDR), Poland, Finland, Czechoslovakia, Hungary, Austria, Switzerland, Belgium and France. Catalogues and lists of museums visited are published in Bender Jørgensen 1986 and 1992. A planned third volume based on textile finds from Central Europe was never completed; for a catalogue of the (Pre-Roman) Iron Age textiles see Bender Jørgensen 2005. A database of European Bronze Age textiles based partly on this work has been compiled within the framework of the HERA JPR funded project Creativity in Craft Production in Middle and Late Bronze Age Europe (CinBA) and will be made accessible online.



Fig. 1: The author visiting Polish colleague Jerzy Maik and his excavation team in Kalisz, 1984.

must be difficult to imagine for those who have not experienced it. Everything had to be planned, visas applied for, and hotels booked and paid for in western currency well in advance of a journey. It was impossible to change anything, and refunds were out of the question. Departing for places like the DDR, Poland, Hungary or what was then Czechoslovakia was like setting out on an expedition. Crossing borders was scary, and reportedly could take hours. Would police and customs search me and my little car, confiscating any printed material? What about my microscope, a vital piece of equipment and a main reason for travelling by car? How about the box with spare parts for the car, or the one with coffee, chocolates and other delicacies intended as gifts for the curators and others I was to meet on my way? Before setting off for Poland in the summer of 1984, I was told by Danish colleagues that it would be wise to bring food, as that was in short demand and I might need it both as gifts and for my own consumption. *Solidarność*, the Polish social movement led by Lech Wałęsa, had been forbidden by martial law in 1981, but was very much alive under the surface at the time of my visit. Several of the Polish colleagues I met were involved in it, and gave me small presents of pins and other symbols of growing resistance against Communist rule.

In some ways travelling behind the Iron Curtain was like going back in time, to the Denmark of the 1950s when coal was the main type of fuel for heating, cars were rare and horse-drawn carts and ploughs were still used in the countryside. Buildings as well as roads were very run-down and the traveller from the West was left with the distinct feeling that nobody had bothered to do any maintenance work since 1945. It was also very lonely. Most of the colleagues I met in the DDR were expressly forbidden to have any dealings with me outside office hours, and the atmosphere of oppression was quite suffocating. The situation in the other

countries was more relaxed; here the lack of a common language was the main barrier, and in both Poland and Czechoslovakia I was invited by colleagues for meals in their homes.

As travel accommodation was booked through the official travel bureau of the country in question, hotels were always those compulsory for westerners. I was also more or less obliged to take my meals in their restaurants. This was quite tiring, and certainly no picnic – at the end of one such journey I went directly to my local supermarket and bought as much fruit and vegetables I could carry. After six weeks of pommes frites and cabbage I was starved of vitamin C. It was also difficult to keep abreast of what was happening in the world as the only newspapers available were Communist. After the fall of the Iron Curtain I revisited some of the towns and museums I had seen in the 1980s. It has been a great pleasure to see how they have changed.

Arriving in a museum

On arrival in the town where a museum is to be visited, the first thing to do is to locate the museum, and find out how to get to it on foot or by public transport. This is best done on a Sunday as weekends are futile days for the travelling scholar, best used for moving from one place to another. In most countries, museums are open to the public on Sundays (even if things are quiet behind the scenes), so it is the perfect time to investigate, and in many cases also the best chance to see the exhibitions as most of the following work days will be spent in storerooms. It is also an opportunity to locate the staff door, which is rarely the same as that of the visiting public.

Monday morning at 9AM was my preferred time to arrive at the staff door, and ask for the person who had replied to my letter.

Behind the Iron Curtain this was always the Director, which meant I was ushered to his office, offered coffee and interviewed before I was handed on to the curator who was to be in charge of me. The latter usually took me directly to the storerooms. This caused a practical problem as it meant that I had to dress in a way that made me appear respectable to the director, *and* suited for my rather dusty work among the shelves, boxes and artefacts in the cellar. A beige polyester pantsuit with indestructible knife-edge creases proved the best solution. Things were more relaxed in Western Europe, but the ritual of coffee and interview was standard there as well. This is part courtesy, partly a way of assessing if the visitor is a serious scholar, to be trusted in the storerooms. It is also an important way of establishing networks.

My wish to search for textile remains was unusual, and I was often told, “sorry but we do not have any textiles” or “we have just one or two”. To counter that I told them that this was more or less what the Danish specialist in the Roman Iron Age said when I asked if she had noted any textile remains in the collections of the National Museum in Denmark. Her answer was: “perhaps one” – I found four hundred. I also brought distribution maps of different types of textiles, to demonstrate that textiles were archaeological artefacts just like fibulas, pottery etc. Both helped to persuade directors and curators to let me look for myself, usually with good results. On my return from a series of museum visits I wrote out lists describing the textiles found in each museum and sent them to the curator with my thanks.

Storeroom organisation

My visits to European museums 1982-1987 meant encountering many ways of organising storerooms. Most followed basic principles of chronology combined with find or artefact categories. Those were the ones I liked best, as they suited my way of working, allowing me to concentrate on periods and find groups where it was most likely that textile remains had survived. Some museums organised their stores according to the date or number of accession, mingling artefacts of all periods. These I found difficult, and extremely time consuming, as it meant I had to open every single box on the shelves. With the advent of digital catalogues and databases this type of storage system has become more accessible, but only if someone has noted the feature you are looking for and entered it in the database. If not, it does not exist, and cannot be found.

Storage boxes for archaeological artefacts may take many forms. In some museums they are of uniform design, in others matchboxes, shoeboxes and any other kind of container has had to serve. Some have lids, others are, or were, open. Both have their advantages and disadvantages. Closed boxes protect the artefacts against dust and rough handling, but – unless contents are clearly indicated – they have to be opened to see what is inside. This takes time. Still, at many museums it was the only way, and over time I developed considerable skills in the noble art of opening boxes. Transparent lids were a rare blessing. For my purposes, open boxes were best, as they allowed a quick look to decide whether textile remains were to be seen or not, and if not go on to the next. Open boxes allow dust to settle on the artefacts. In some museums the layer of dust was quite thick; in one case it was mainly coal dust, causing the hands, face and clothes of the visitor to become absolutely black after a couple of hours work. In several museums the Second World War still casts a shadow in the form of missing finds and records, or disorder caused by bombs.

Local habits and holidays

As a travelling scholar it is important to be aware of local habits, especially local holidays and meal times. Almost every European country has holidays that are specific either to that country, or to the prevalent version of Christianity. Norway’s National Day, for example, is 17 May; Sweden’s is 6 June; Denmark has a movable holiday, *St. Bededag*, placed on a Friday in late April or May. The United Kingdom has Bank Holidays; 1 May is a holiday in many countries, but not all; Catholic countries celebrate days that do not hold any meaning for Protestants, and vice versa. This makes it complicated to plan a series of museum visits abroad, as a local holiday means a lost working day. Today, my calendar contains a list of holidays in most European countries. In the 1980s, things were less advanced, and I discovered unexpected holidays the hard way. Once, however, visiting a museum in Poland, I was spared the loss of a valuable day by the one member of staff who was a member of the Communist Party and therefore did not observe religious holidays.

Meal times and working hours are other cultural variables. In some countries, lunch is a quick snack, in others it is a serious meal. Accordingly, lunch breaks last anything from 20 minutes to several hours. Working hours also vary. In most of Europe north of the Alps, office hours usually start at 8 AM or at the latest 9 AM and last until 4 or 5 PM, with lunch breaks between noon and 1 PM; this makes it a safe bet to turn up at 9 AM on the first day. Museums in the UK tend to discourage visitors before 10 AM; lunch is at 1 PM rather than noon, and office hours often go on till 6 PM. In France, the lunch break may be as long as two hours; working hours resume at 2 PM and, like in Britain, continue all afternoon. In Poland, lunch is also a serious meal, but taken at home after working hours. Instead, the mid-morning tea break serves as a stop-gap. For the travelling scholar, it is important to have a general idea of this, to avoid social gaffes but also to know when, how and where to get something to eat, especially if the traveller’s regular habits do not concur with those of the host country. I was caught out several times, e.g. in Poland because there was no lunch break. Once, locked into the storeroom in an Austrian museum, the curator forgot to think of me at lunch time. Through the window I could see the museum staff having lunch in the garden, but couldn’t call out to them, and had to suffer the pangs of hunger until they rescued me at the end of the day.

Experiencing Europe

My need for a microscope made it necessary to travel by car; driving through Europe taught me invaluable lessons of distances, landscapes and waterways. My first major journey in 1982 took me across Scandinavia at its widest point, from Stockholm to Bergen. This taught me the difference between relatively flat Sweden with wide, fast roads, and the mountains of Norway with narrow, winding roads and deep fjords that could only be crossed by ferry. Driving through the UK in the early summer of 1983 brought further contrasts. My initial fear of driving on the left side of the road soon dissipated; I even managed to drive into London and park right outside my hotel. Crossing to Ireland by ferry taught me never to arrive on a Monday morning. I slept badly, had to spend valuable time in the morning finding the hotel and a place to park, and was thoroughly exhausted when I finally arrived at the Dublin museum.

Further journeys in 1983 and 1984 took me from the Low Countries across the two Germanies to Poland, and on to Finland. When I resumed travelling in 1987, venturing into Central

Europe, the concept of the North European Lowlands was put into perspective. It took two days to go from my home in Denmark to my various goals – Prague, Mainz, Zurich or Nancy, and just as long to get back, from Szombathely, Vienna, Munich or Paris. On each journey I saw the landscape change between flat and mountainous.

Experiencing Archaeology

Museums are the Keepers of Archaeology, the stored records and evidence of the work of archaeologists throughout the history of the discipline. Visiting museums offers insights into much more than the research questions of the visitor. Buildings, exhibitions, organization of storerooms and records, and the composition and attitudes of the staff all have stories to tell. They reflect political history, changing attitudes to the past, academic hierarchies and perceptions of how archaeology should be carried out and communicated. The artefacts and records in their keeping are our main sources. Getting to know the material intimately, at first hand, is an essential part of the archaeologist's work. That is why the founding fathers of archaeology went on grand tours of European museums, and later generations followed. Much has changed since the time of Worsaae, Hildebrandt and Montelius, but visiting museums is still an important way of experiencing archaeology.

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REFLECTIONS AND HYPOTHESES ON UNDERWATER PREHISTORY IN THE CENTRAL MEDITERRANEAN

Sebastiano Tusa

Abstract: This paper addresses the need to combine palaeoenvironmental and palaeoclimatological marine geology, as well as sea-level changes and coastal sediment dynamics, with underwater archaeological investigations to identify possible prehistoric sites in the central Mediterranean. Underwater archaeological evidence from around Sicily suggests the existence of submerged sites, the analysis of which could offer invaluable insights into the early human and animal colonization of the island as well as provide explanations for later phenomena, which cannot be understood through archaeology only.

Keywords: prehistory, proto-history, colonization, neolithization, palaeoenvironmental studies, palaeoclimatological marine geology, sea-level changes

Introduction

It is wise and necessary first to say that aside from the well-framed picture expressed by Flemming and others (Flemming et al. 2003), there has been no incontrovertible evidence for early prehistoric archaeology in the central Mediterranean to date, particularly if we exclude the famous cave of Cosquer not far from Marseille (Clottes et al. 1997; Clottes et al. 2005), some traces of Neolithic settlements in Roussillon (Geddes et al. 1983) and Grotta Verde in northern Sardinia (Lo Schiavo 1986; Eadem 1987; Tanda 1980). The material recorded from Palinuro (Blanc 1940) and Malta (Martineau 1966) cannot be taken as concrete evidence of underwater prehistoric sites since further investigations are required.

The situation is even clearer if we examine not the entire central Mediterranean region, but only the area around Sicily, between southern Italy and the Aeolian islands, in the north, and Pantelleria, Lampedusa and Malta, in the south (Tusa 1999). The evidence for underwater prehistoric submerged settlements has actually been more thoroughly treated from a mythological perspective. But this will be not the approach taken here, as I will avoid dealing with the fascinating, but elusive question of the identification and position of Plato's Atlantis, which has been discussed in great depth by many authors, either from a mythological/literary standpoint (Frau 2003) or from a morphological and geographical perspective (Collina-Girard 2001; Gutscher 2005).

The controversial underwater pre- and protohistoric evidence around Sicily

The most ancient evidence for a site with a genuine paleontological presence and of possible prehistoric interest was localized at a depth of about 8 m not far from the coast near the lighthouse of Torretta on the south-western Sicilian shore. A few years ago an amateur diver found two fossilized molars of an elephant, probably belonging to the species *Mnaiderensis*; according to the accepted chronology this animal was living in Sicily around 200,000 BP (Accordi 1972; Burgio & Cani 1988) (Fig. 1). On the basis of a preliminary consideration of the context I believe that this elephant died in one of the wide lagoons that characterized the area, now submerged, south of the actual south-western Sicilian coast. This area, between Sicily and Cape Bon, was above sea level during

glacial periods and was characterized by the presence of wide lakes and lagoons, as well as marshy areas during interglacial periods when the sea level was rising.

The archaeological potentiality of this site is based on the controversial problem of whether or not humans were present in Sicily before the Upper Palaeolithic. As is widely known, to date we do not have real evidence of a human presence in Sicily in the Lower and Middle Palaeolithic and we have to wait until the end of the Upper Palaeolithic to find real traces of human settlements in the caves (Tusa 1999). We do, however, have numerous surface collections of stone tools typologically belonging to the Pebble Culture, Acheulean, Clactonian and Tayacian lithological complexes, always without any real archaeological context (Piperno 1988). Does this site provide the opportunity to fill this strange and incredible gap in our knowledge?

Another very interesting discovery was made during the underwater investigations that the Soprintendenza del Mare was carrying out in collaboration with MAP (Association Maritime



*Fig. 1 Fossilized molars of an elephant, probably belonging to the species *Mnaiderensis*, found near Torretta (south-western Sicily) at -8 m.*

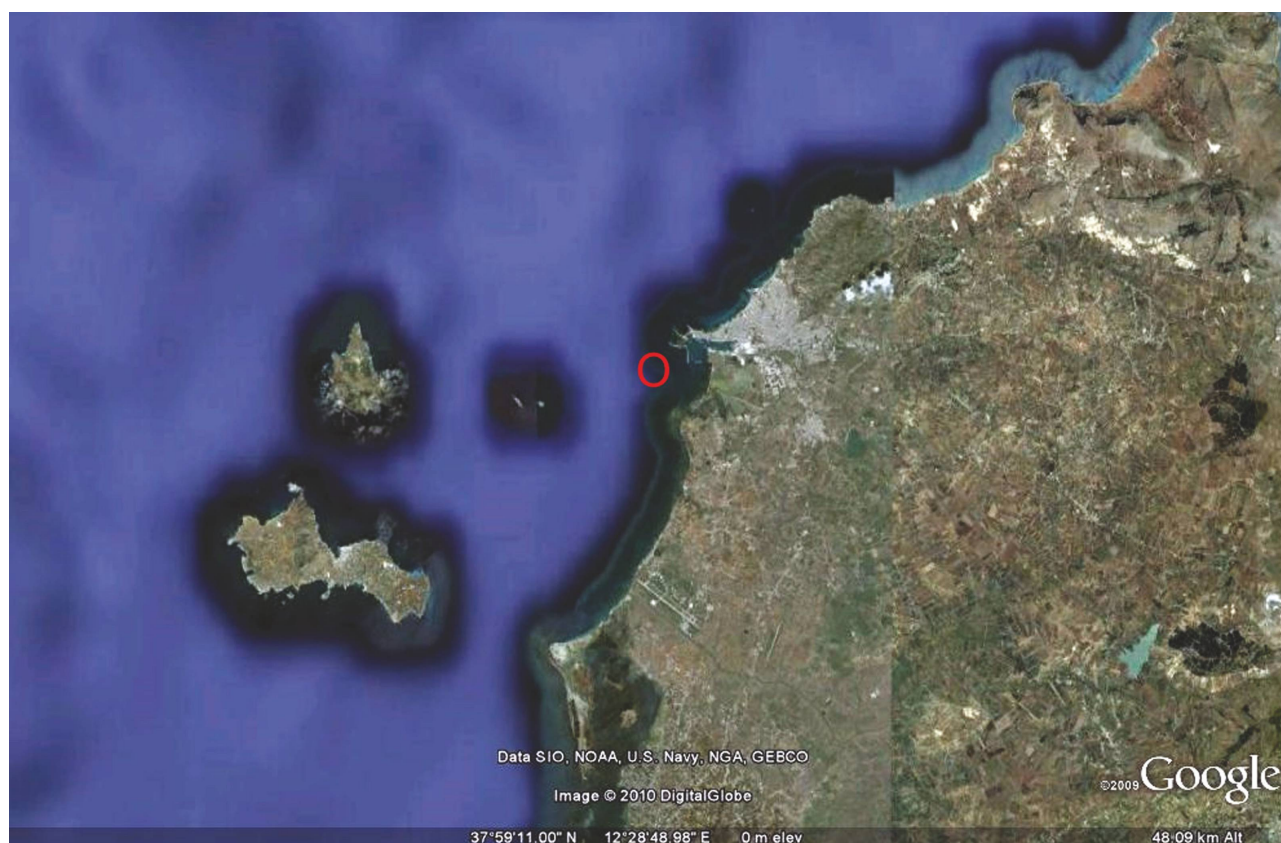


Fig. 2 The place in which a little piece of wood was collected at a depth of about -20 m dated by ultrasensitive accelerator measurement of $^{14}\text{C}/^{12}\text{C}$ isotopic ratios to 40.060 ± 900 bp.

Archéologie & Prospection) as part of the project aimed at discovering the wrecks belonging to the ‘Saint Louis fleet’ that was destroyed by a typhoon on the night of 22 November 1270 in the waters in front of Trapani. During the 2007 campaign, on a posidonia and sand seafloor at a depth of about 20 m, a little piece of wood, lying near an anchor’s crown, was collected at a depth of about 60 cm down in a sand substratum (Fig. 2). This sample was dated at the CIRCE laboratory of Caserta, directed by Filippo Terrasi, by ultrasensitive accelerator measurement of $^{14}\text{C}/^{12}\text{C}$ isotopic ratios, to 40.060 ± 900 bp.

Following the sporadic prehistoric findings there is an isolated fragmentary Mycenaean III stirrup jar (fourteenth–eleventh centuries BC) that lay, along with some pottery belonging to the Milazzese phase (fifteenth–fourteenth centuries BC), in the sea near Capo Graziano on the eastern coast of the island of Filicudi in the Aeolian Archipelago (Bernabò Brea 1978; Bernabò Brea & Cavalier 1991, 279) (Fig. 3). The real archaeological context is not clear. It was found in a place where there are many wrecks due to the presence of the insidious rock that was - and is - a big danger for seafarers. But it doesn’t seem that the stirrup jar was a part of the wreckage. The idea that this prehistoric pottery might have belonged to a submerged settlement also seems to have been rejected; it appears to be more realistic to assume that the pottery fell along the steep cliffs of Capo Graziano from the well-known contemporary settlement of La Montagnola, where other similar imported ceramics were found during the excavations.

Again in the Aeolian Archipelago we encounter the ‘pseudo wreck’ of Pignataro located on the eastern coast of Lipari, not far from the multi-aged settlement on the Acropolis (Bernabò Brea

1978; Ciabatti 1978). I use the term ‘pseudo’ because, unlike the excavators, I am convinced that the group of vases belonging to the Capo Graziano early Bronze Age phase (around 2,000–1,800 BC) did not belong to a wreck, but lay in their proper original context partially modified by landslides, seismic and brad seism collateral effects. My hypothesis is based on a direct analysis of the underwater context situated between -20 / 40 m, characterized by



Fig. 3 Fragmentary Mycenaean III stirrup jar (fourteenth–eleventh centuries BC) found in the sea near Capo Graziano (Filicudi, Aeolian Islands).



Fig. 4 Site of the 'pseudo wreck' of Pignataro (western coast of Lipari, Aeolian Islands) with early Bronze Age vases found at a depth of -20 m.

terraces with a slight oblique shape due to the local morphological stresses typical of this area of Lipari where evident phenomena of brad seism and earthquakes were particularly frequent (Fig. 4).

There is also another clue indicating the presence of a strong phenomenon of land immersion (negative brad seism) in the area that came to light during the work of reshaping of Lipari's northern harbour (Sottomonastero) in 2008. An impressive stone porch was identified at a depth of about 12 m below sea level. Many big column bases are lying on the sea bed under a thick layer of alluvial and volcanic debris (Fig. 5). The position of the stone bases gives the impression that a strong earthquake also caused further stress to the macroscopic morphological movement of the area. The porch could be dated to the second century AD.

So, taking the estimates of 30-50 m for the early Bronze Age, of 12 m for the Roman Imperial Period and 2-4 metres for the post medieval period, I think that the picture of a strong phenomenon of immersion could be logical for this area of Lipari. Of course this hypothetical explanatory model must be proved by direct analysis, which has already begun with the help of a team of geologists from the University of Catania.

Another very interesting indicator of relevant morphological stress is given by the middle Bronze Age rock-cut grave in Ognina, a few miles south of Syracuse. The grave, dating to the fourteenth century BC, is today partly (almost half) submerged in the sea with the floor laying at -1.20 m below actual sea level. Kapitæn excavated in the same area, at a depth of about 7 m below sea level, and found flint tools and Neolithic pottery (Fig. 6).

Some post holes cut into the rock in linear patterns belonging to long rectangular Neolithic huts are still visible on the rocky coast just a few cm above sea level (Kapitæn 1970; Scicchitano et al. 2008). This is a situation that needs more care and comprehensive scientific investigation because it may be a place in which original prehistoric contexts could still be present. Again this evidence points to significant morphological stress that provoked a detectable change in sea level (rise) from the Neolithic (-8 m) and Middle Bronze Age (-3 m).

The same phenomenon can be registered in other parts of the same oriental coast of Sicily north and south of Syracuse. In particular, some rock-cut graves of the famous Thapsos Middle Bronze Age settlement, north of Syracuse, are clearly too close to the sea level, or are slightly submerged, meaning that there was a slight but detectable rise in sea level since the fourteenth century BC (Basile et al. 1988; Scicchitano et al. 2008) (Fig. 7).

The same situation is attested at some quarries near Syracuse that had been used by the Greeks to build their town during the Archaic Period. The lower surfaces of some are already covered by the sea (a few cm), suggesting also that there is a slight difference between the present day and the Greek period (Lena & Basile 1986; Scicchitano et al. 2008).

In Malta, in addition to the controversial evidence already mentioned, there is also the unexplained situation of cart ruts that have been found running into the sea. This is the case in the Bay of Marsashlok, near the temple and settlement of Borg in-Nadur (Evans 1971: 203). No real explanation has been given so far for this enigmatic evidence of Maltese prehistory,

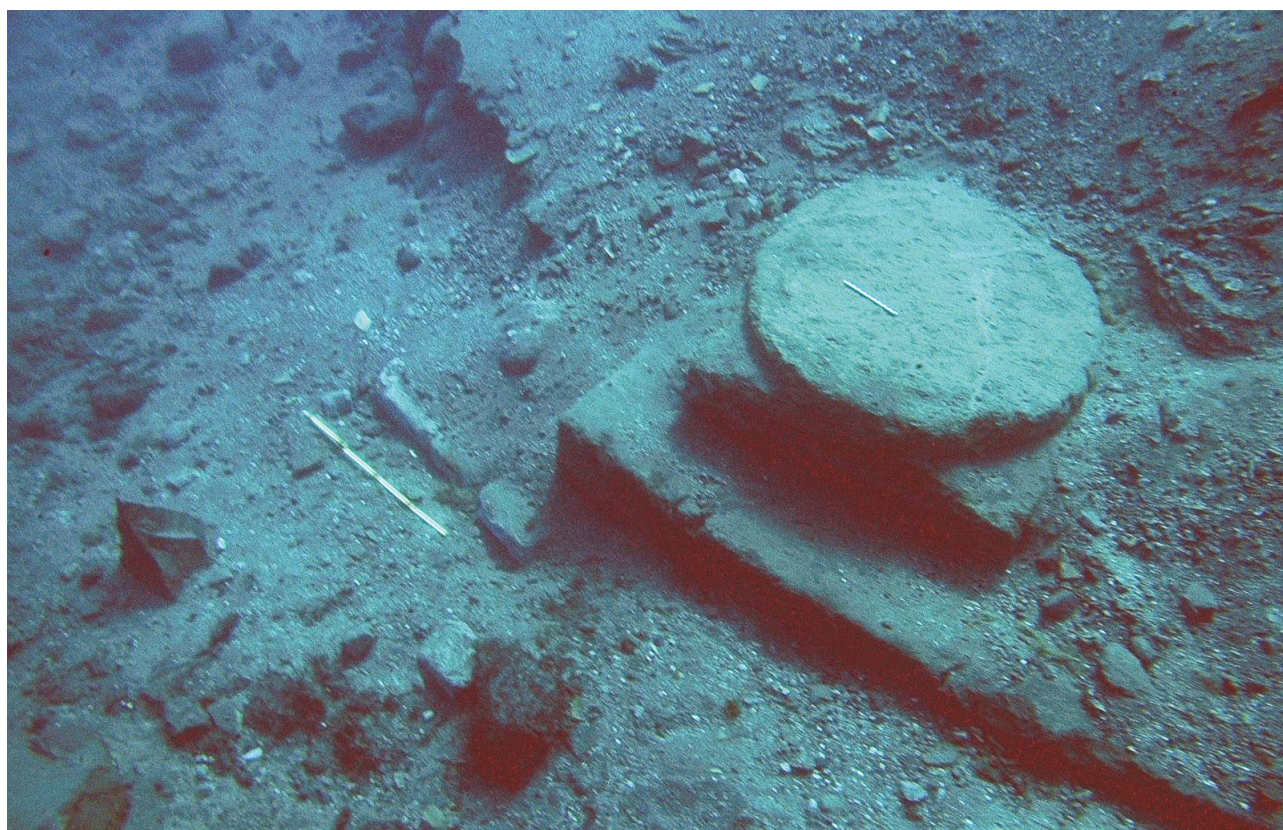


Fig. 5 Base of a stone column of an Imperial Roman porch found at a depth of -12 m in the area of Sottomonastero (western coast of Lipari, Aeolian Islands).

where the chronology is still imprecise; the fact that such ruts are typically found going into the water is therefore even more difficult to understand and explain. This phenomenon could have some interest for our research if those cart ruts were not purposely introduced into the sea for sacral rituals. But again this is something that must still be explained, although Evans infers that the cart tracks 'enter the sea on the western side of St George Bay, Marsaxlokk, and, presumably, emerged again on the north-east side'. He assumed that they were 'evidence of a subsidence at this point of several feet' (Fig. 8).

Moving to Pantelleria we have another enigmatic discovery made some years ago by the Soprintendenza del Mare in the sea of Cala Tramontana at a depth of about 20 m. Dozens of pieces of flint were found in an area full of Punic and Greco-Italic amphorae (Abelli 2007: 36). There are no real tools, but only un-retouched small pieces of flint which evidently came from North Africa. This is based on a simple visual exam that excludes it coming from Sicily and, of course, from Pantelleria. There is nothing else in the same context other than late Hellenistic pottery belonging to a well-defined wreck. If we do not accept the idea of a prehistoric context (wreck or submerged settlement) the only other possibility is that the flint was used for mosaics. In this case the archaeological context could be logical.

Finally, it is worth remembering the well-known bronze statue representing the Phoenician god Reshef, which was found in the sea not far from Selinus, on the south-western coast of Sicily (Purpura 1981; Tusa V. 1973). The original context of this object dated to the tenth century BC is still unknown, although it seems

highly probable that the bronze was transported on a Phoenician vessel sailing from the East towards the West, near the southern shore of Sicily. It is important to remember that this discovery confirms Thucydides' tale on the first Phoenician Diasporas towards the central and western Mediterranean in the period in which Cadis and Lixus were colonized (eleventh and tenth centuries BC) (Fig. 9).

Palaeo-geographical background

There is increasing evidence to support the idea that coastal environments had a central role in human evolution and dispersals. Most prehistoric coastlines are now underwater due to eustatic movements during glacial cycles, and the apparent lack of evidence for a close relationship between people and the coast can most plausibly be ascribed to the dearth of investigations of submerged sites. Coastal environments, mainly those with steep cliffs, provide a great diversity of food resources due to the existence of multiple eco-zones in close proximity. One of the richest and most easily exploited coastal resources are molluscs from marine rocky intertidal communities, which were important to human populations living on the coast as far back as the Middle Palaeolithic (Fa 2008).

Palaeo-environmental studies and the reconstruction of our area were mainly based on paleontological remains discovered in terrestrial and marine sediments, on morphological considerations and on absolute chronology of underwater caves (samples taken from stalagmites) (Antonioli et al. 2002).

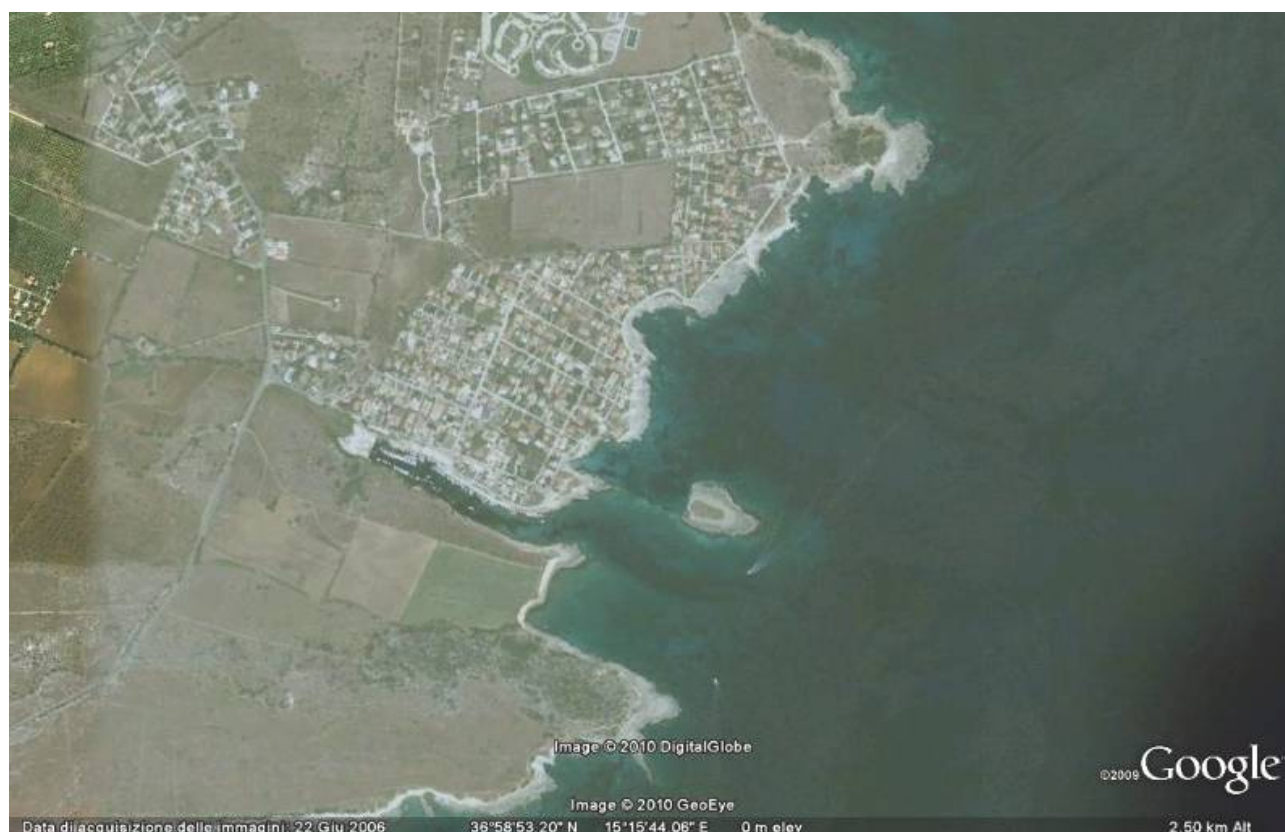


Fig. 6 The island of Ognina (south of Syracuse, eastern coast of Sicily) where a middle Bronze Age rock-cut grave, dating to fourteenth century BC, is today partly (almost half) submerged with the floor laying at a depth of -1.20 m. Flint tools and Neolithic pottery were found in the same area at a depth of about -7 m.

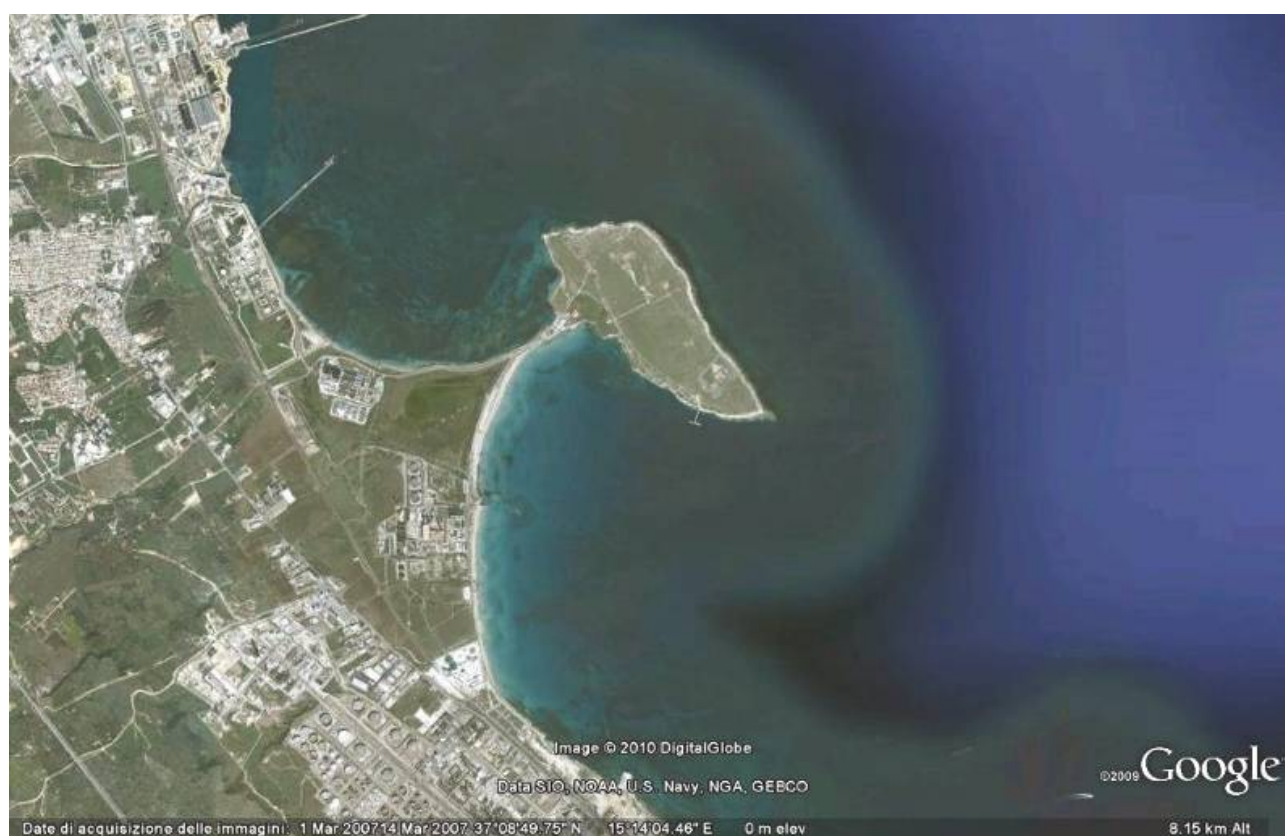


Fig. 7 Thapsos peninsula where some middle Bronze Age rock-cut graves, dating to fourteenth century BC, are partly submerged

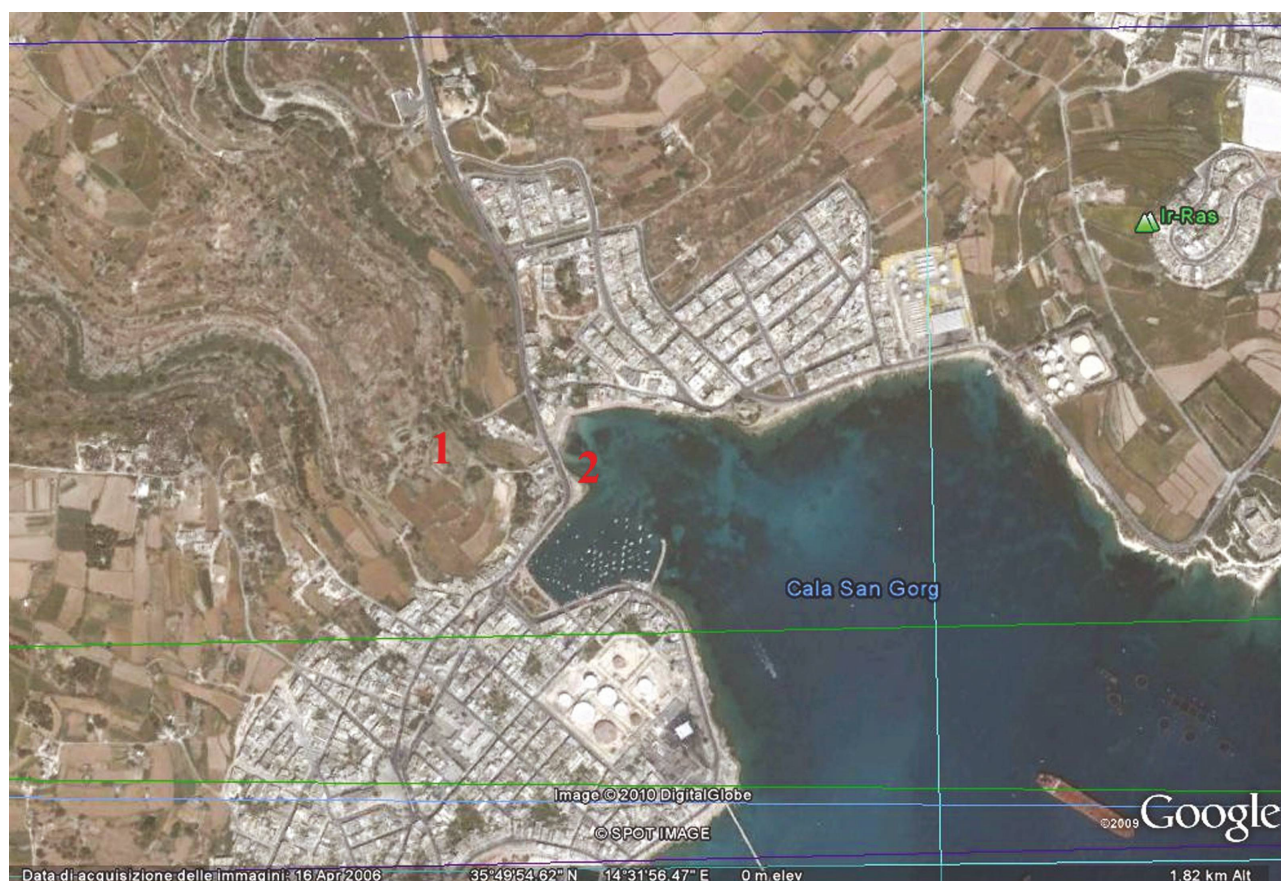


Fig. 8 St George Bay (Marsaxlokk, eastern Malta) where cart tracks enter the sea on the western side.

The glacial-hydro-isostatic component along the central Mediterranean coasts (peninsular Italy, Sardinia and Sicily) has been predicted and compared with field data at sites not affected by significant tectonic phenomena. By comparing ages and elevations of palaeo-sea level indicators with the predicted curve it is thus possible to accurately evaluate vertical tectonic movements of coastal regions (Shackleton et al. 1984) (Fig. 10).

Let us now consider the geographical conditions of Sicily in the past. During the Middle and beginning of the Late Pleistocene (1M – 75,000 years BP) northern and central Sicily were always emerged, whereas coastal areas, mainly on the southern part of the island, fluctuated with limited or wider phenomena of immersion and emerging. After Eutirreniano (125,000 BP) there was a general uplift of the entire island at different rates and values. Seismic, as well as volcanic, activities created a multifaceted pattern of uplifting.

It was in the last part of this period that Sicily was populated from southern Italy by large mammals such as elephants (*Elephas antiquus*, *mnaiensis*, *falconeri*), hippos, wild ox, bison, deer, wolves, bears, lions and hyenas (Bonfiglio & Piperno 1996; Tusa 1999). The contemporary presence of such animals in Malta indicates that there were some chronological phases during which Sicily and the Maltese archipelago were connected mainly by limited strips of land. At the end of this period (during the last two Riss glacial stadia) a wide part of the Sicilian continental shelf was emerged (Vaufrey 1929).

During the last phase of maximum glacial expansion between 75,000 and 10,000 BP the outline of Sicily was profoundly different from today. Eustatic fall reached the consistent quote of 130 m above sea level compared with today. Thus, coastal plains were much more extensive, particularly in the southern part of Sicily. In the south-east, Sicily was connected with the Maltese archipelago, whereas the western part the islands of Favignana and Levanzo were tied to the mainland.

Moreover, between Mazara del Vallo and Sciacca there was a wide and large promontory that stretched out towards Cape Bon. Incidentally, due to the similar morphological development the area of Cape Bon stretched out towards western Sicily. The consequence of such a situation was that the actual Sicily Trench was, at that period, a narrow sea strait just a few kilometres wide (Fig. 11).

This geographical situation lasted until the end of the last major glacial phase of Wurm dating to about 10,000 BP. Between that date and 6,500 BP there was a profound change in the sea level reaching more or less today's actual value (Agnesi et al. 1997).

This general pattern can be detailed by the abovementioned research based on a solid grid of absolute chronological data (C14) produced by the analysis of several samples of stalagmites taken from the submerged caves. According to this pattern (Antonioli 1997; Antonioli et al. 2002) we can assume that between 10,000 BP and 2,000 BP the sea level changed from about -50 m to about -0.40 m. Thus during the Mesolithic the sea level was between

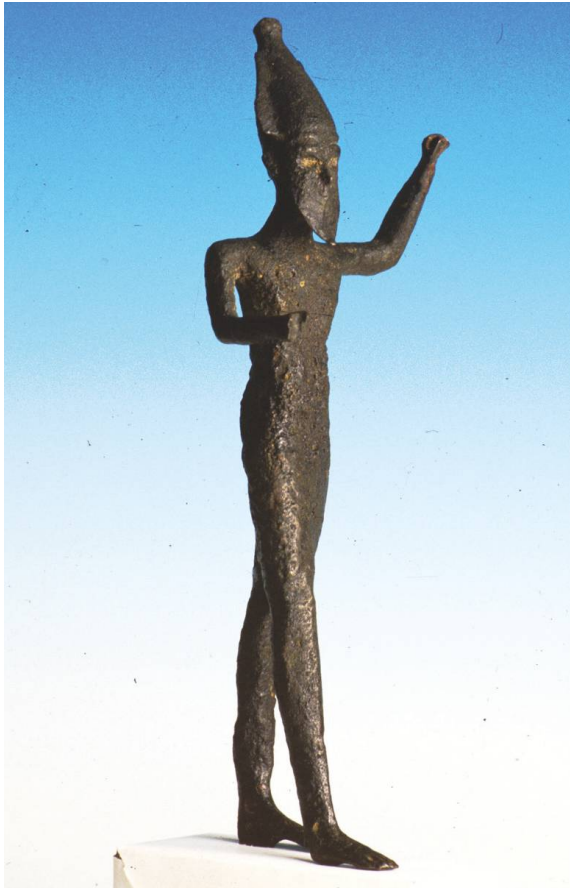


Fig. 9 Bronze statue representing the Phoenician god Reshef found in the sea not far from Selinus, on the south-western coast of Sicily.

approximately 50 m and 20 m below that of today. Consequently, during the Neolithic the sea level was between about 20 m and 5 m below the current sea level, and finally during the Bronze Age it was between 5 m and 3 m below this. Of course such estimates must be taken with caution because they refer to a generalized situation, and cannot apply to all the area under consideration. However, aside from some slight variations, the numbers could be taken as a starting point to select submerged areas with a high degree of archaeological potential based on their being the most suitable sites for human occupation and settlement. In the absence of massive and traumatic volcanic or seismic phenomena, such as near the Graham Bank (Isola Ferdinandea), or around Pantelleria, a wide percentage of the promontory that was stretched towards Cape Bon from the south-western coast of Sicily is extremely important for our purpose because there could be traces of settlements here dating back to the Upper Palaeolithic through to the Bronze Age (Fig. 12).

There is another interesting study that confirms the pattern created by such morphological change. It is the investigation of the Stagnone situation in the westernmost part of Sicily between Trapani and Marsala. Stagnone is the surviving lagoon from a wider system of marshlands and lagoons that spread all around western Sicily when the sea level rose after the last glaciations (Fig. 13). In Stagnone comprehensive studies aimed at explaining the morphological change during the last 6,000 years showed that during the Copper and Bronze Ages (4,000 – 2,000 BC) sea level was at least 2 m below the actual with local tectonic uplift taken into consideration (Basso et al. 2008).

Incidentally, archaeological research in some caves in this coastal part of Sicily has highlighted the presence of communities of hunters starting with the Upper Palaeolithic, and endowed with

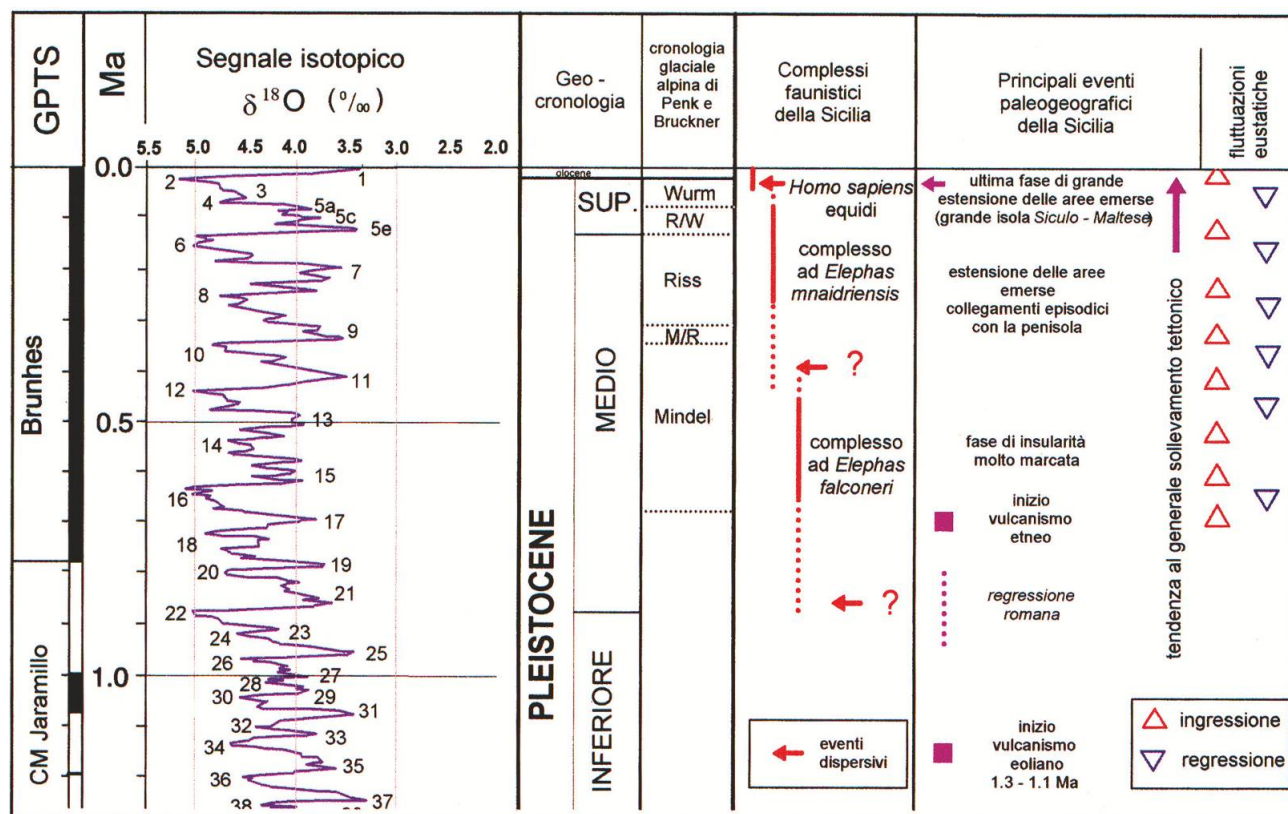


Fig. 10 Chronology and palaeogeographic dynamics in the middle and late Pleistocene of Sicily.

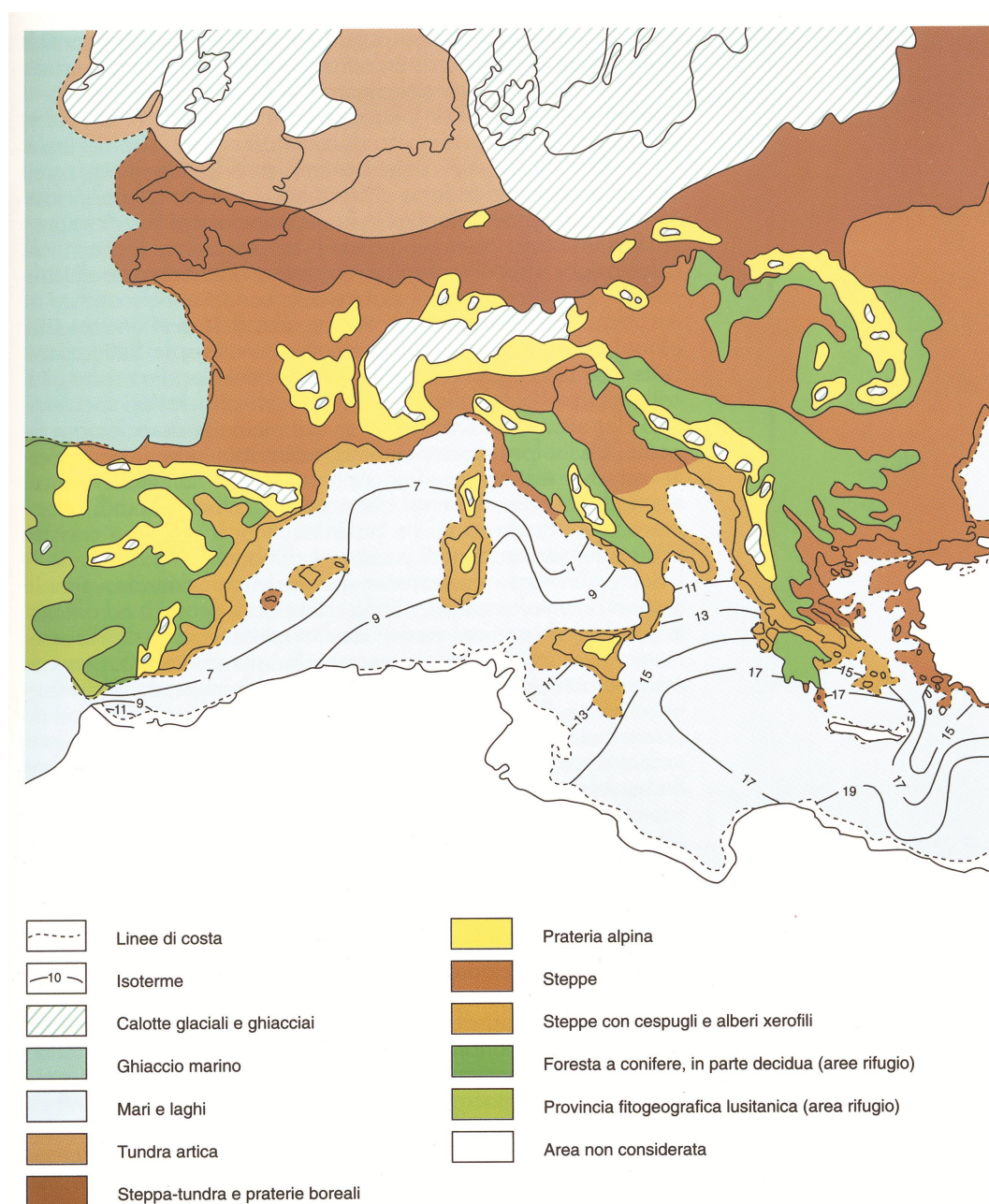


Fig. 11 Palaeogeography of Europe during the last phase of maximum glacial expansion between 75,000 and 10,000 BP (from: Agnesi, Macaluso, Masini 1997, *L'ambiente e il clima della Sicilia nell'ultimo milione di anni*. In Tusa S. (ed.) *Prima Sicilia* 1997, Palermo: 31-53).



Fig. 12 Palaeogeography of Sicily during the last phase of maximum glacial expansion between 75,000 and 10,000 BP with the large promontory stretching out towards Cape Bon.



Fig. 13 Aerial view of Stagnone (western part of Sicily).

great skill in the production of flint tools that reflect the typology of the Epigravettian culture. These communities developed slowly until they adopted agriculture and sheep-raising among their primary activities. This shift must have coincided with a major change in their geography. We are certain that Levanzo and Favignana were connected to the Trapani coast until the last Würmian glaciation (Agnesi et al. 1993) (Fig. 14).

From the archaeological perspective this situation, also verifiable through the study of the local bathymetry, is mirrored in the images of the first and most ancient group of engraved figures on the walls of the Genovese Cave on Levanzo, where typical grassland animals like the wild horse, deer and wild ox evidently engaged the imagination of the Palaeolithic hunters. With the end of the Pleistocene, around 12,000 BP, this link with Sicily was severed and the present day insularity became the norm in these places. This macroscopic geographical change for Levanzo, which became an island after the end of the Pleistocene, is also signalled by the depictions in the second group of painted figures in the same cave, with subjects compatible with the acquired insularity, like fish (Graziosi 1962).

This means that the plain, the wide submerged area between the actual coast of Sicily running from Trapani to Marsala and the two islands of Favignana and Levanzo, was emerged until the Mesolithic and afterwards began its immersion. During the

Neolithic it was therefore typically marshy and lagoon-like, as it is nowadays in the area of Stagnone, where the Phoenician town of Motya was located. It is therefore an area where there is much potential for identifying ancient Palaeolithic, Mesolithic and early Neolithic sites.

It is highly possible that the transition from a hunter-gatherer society to one based on farming was favoured by the presence of wider coastal plains near the caves, such as Uzzo (Tusa 1985; *ibid.* 1996) and others on the western and northern coasts of Sicily where there were traces of, and the evidence for, such change. It is widely accepted, based on the evidence of postglacial marine transgression, that the coastal plains bordering those caves were much more extensive, suitable for farming and herding activities, until the Mesolithic - Neolithic transition.

The ease with which one might approach by sea, thanks to those wide coastal plains, is still identifiable some metres below actual seal level, facilitating the 'discovery' of the sea by the Mesolithic hunters and gatherers.

Mesolithic stratified deposits are, in fact, filled with valves of sea molluscs, indicating a first timid approach toward the most accessible parts of the sea, where from the land it was possible to gather limpets, clams, *trocus*, *patalla* and other molluscs. This first happy contact between humans and the sea constitutes the

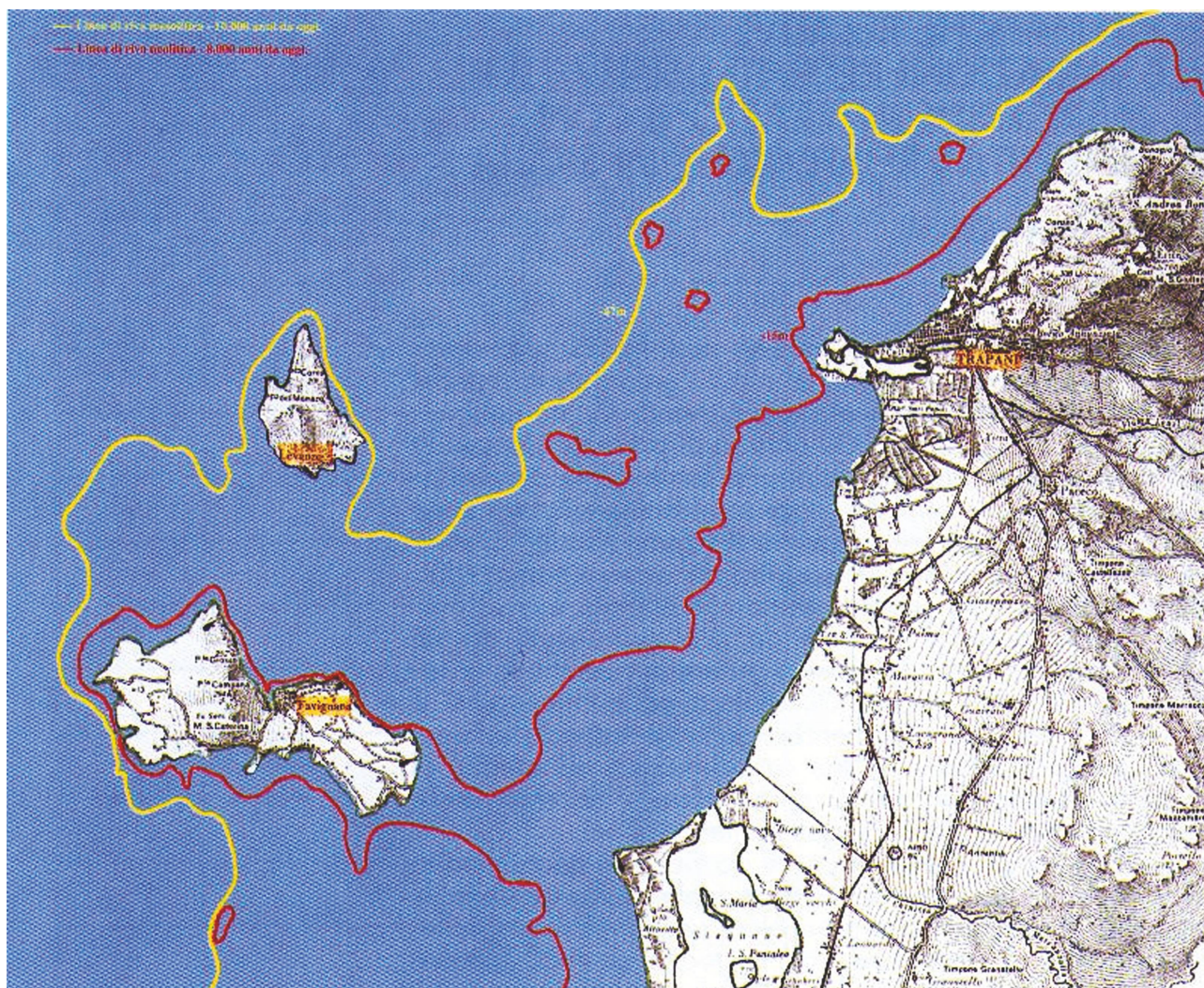


Fig. 14 Palaeogeography of the westernmost part of Sicily (Aegades Islands and Trapani coast) with an indication of coastlines c. 10,000 BP (yellow) and c. 8,000 BP (red) (from: Antonioli 1997, *Problematiche relative alle variazioni recenti del livello del mare e sue interazioni con le comunità preistoriche della Sicilia*. In Tusa S. (ed.) *Prima Sicilia* 1997, Palermo: 147-155).



Fig. 15 The most suitable places to investigate in order to find traces of prehistoric human occupation in the submerged area between Sicily and North Africa

prologue to what happened, not only in Sicily but also in the other areas of the Mediterranean, starting in the seventh millennium BC. The Mediterranean Sea was discovered through fishing, but suddenly, through seafaring, it also became the greatest channel and opportunity for developing cultural, ethnic and economic interrelations (Tusa 1987).

It is still without a doubt that the spread of the Neolithic was encouraged by the closeness between regions that today are much more distant from each other. Taking such geographical factors into consideration we can easily understand why the transfer of certain phenomena by sea was so intense, such as technological know-how, seeds and domesticated animals from the Balkans toward the southern Italian peninsula. Similarly we cannot prematurely discard the hypothesis that some domesticated elements may have been introduced not from the East, but from other areas like North Africa. In particular, this might be the case for the introduction of sheep into Sicily. Even if the indications in this regard are contradictory, it could be hypothesized that the so-called 'Barbary Sheep' (*Ammotragus lervia*), endemic in North Africa, could have played a role in the domestication of sheep in

Sicily, Malta and southern Italy (Camps 1987; Uerpmann 1987). Moreover, the last DNA analysis on Neolithic domesticated pigs from Uzzo Cave shows close connections with North Africa.

There is evidence that can be easily explained, but only if we take into consideration the totally different geographical situation that existed, mainly to the south of Sicily. It is widely known that obsidian was traded from the native places during the Neolithic, such Lipari, Sardinia, Pantelleria and Palmarola (limiting to the central Mediterranean and excluding Aegean sources) and reached almost all the settlements of Sicily, Malta and southern Italy. It is easy to explain how Lipari's obsidian could have reached Sicily and southern Italy, but it becomes difficult to imagine how obsidian from Lipari and Pantelleria could have reached Malta and Lampedusa. If Malta and Pantelleria are rarely visible from Sicily, Lampedusa is absolutely imperceptible from any surrounding land. Again the presence of obsidian in Lampedusa, from Sicily and Pantelleria, but also from Pantelleria to Sicily and Malta, could be easily explained if we take into account that the distance between those islands and Sicily was much less than it is today. Therefore, when we deal with island colonisation during prehistory we have to take into consideration the fact that the geographical situation at that period was totally different. We must be careful about using theories or concepts such as 'island laboratory' when we speak about Mediterranean islands, because the isolation of today could not have been the same in prehistory and, consequently, our interpretation could be wrongly biased by the lack of real palaeogeographical knowledge (Evans 1977; Patton 2003).

Perspectives

It has already been noted that the expansion of the continental ice sheets during glaciations triggered sea level change, which reached a maximum lowering of -150 m, exposing up to 3.2 million square kilometres of the European continental shelf (about 40% more than the present landmass). These regions were probably more important for human settlement because they were closer to the sea. This means that those lands were warmer and more attractive to human settlement because of the resources provided by the sea as well as because the sea made it possible to develop closer relationships with other regions. Although it is still impossible precisely to establish how *Homo Erectus* came into Europe, it is without any doubt that it was from Africa through the Near East or one of those passages (Gibraltar or Sicily Trench) which at that period was smaller than today (Alimen 1975).

Dealing with Sicily's underwater prehistory provides the opportunity to deepen our knowledge about the beginning of human settlement, whether we hypothesize that they arrived from Africa or from peninsular Italy. Sea was not an obstacle for *Homo Erectus* because the distance between land masses was narrow.

The most suitable places to investigate in order to find traces of human occupation are near the potential crossing points. Hence, the submerged area where there was the wide promontory that stretched from western Sicily towards Cape Bon should be investigated in those parts nearer to the crossing points between the two continents (Fig. 15). It would also be very interesting to investigate those areas of the submerged promontory where there are gulfs, bays and protected landing points for seafaring. In such places it will be possible to locate human settlements of various ages according to the depth. Human settlements could exist to a depth of about -150 m, but of course they should be scattered according to their chronology.

Even if there has been an increasing interest in underwater archaeology connected with the study of wrecks and ancient harbours, almost nothing has been done in the central Mediterranean for the study of prehistoric occupation in landscapes that are now submerged.

Much research has been conducted in the fields of palaeoenvironmental and palaeoclimatological marine geology, as well as on sea-level change and coastal sediment dynamics. However, very few studies, if any, have considered underwater archaeology. Now it is time to take a scientific approach with a multidisciplinary methodology and strategy and start investigating the evidence for submerged archaeological sites in the central Mediterranean.

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TALES FROM THE BEECH FOREST: LASER SCANNING PROJECT AT MONTE CIMINO (ITALY) HILLFORT

Serena Sabatini, Christopher Sevara, Martin Fera, Jakob Kainz and Petra Schneidhofer

Abstract: This paper presents the first results to emerge from a new project at the Late Bronze Age (Italian Bronzo Finale) hillfort of Monte Cimino in central western Italy. It summarizes the preliminary results of the project and discusses its significance for Late Bronze Age studies on landscape population and its socio-cultural implications with a particular focus on the Italian Peninsula.

Keywords: Hillfort, proto-urban phenomenon, Bronzo finale/ Late Bronze Age, landscape population, laser scanning, terrain modelling

Introduction

This paper presents the preliminary results of a new interdisciplinary project aiming to contribute to the long and lively debate on the proto-urbanization phenomenon in the Italian Peninsula at the end of the local Late Bronze Age (*Bronzo Finale* BF).¹ The project is primarily based, in this first phase, on the laser scanning of Monte Cimino BF hillfort site in central western Italy.

It is during the Italian BF that we can trace back the local origins of proto-urbanization. Put simply, this is the term used to describe the formation of large settlements dominating vast territories out of what looks like a well-defined socio-political and economic strategy (e.g. Di Gennaro 1986; Guidi 2006; Pacciarelli 2001). The archaeological evidence seems to prove that such passage from scattered villages to large proto-urban settlements happened in the Italian Peninsula long before the first Greek colonies, which is contrary to earlier hypotheses on the issue (discussed in international forums e.g. in Champion et al. 1984:259 and Sherrat 1993:39), independently from their influence (e.g. Guidi 2006; Pacciarelli 2001). It is a complex and multifaceted process in the various regions (e.g. Barbaro 2010a, 2010b; Fulminante & Stoddart 2010, 2013; Leonardi 2010), and is far from being fully understood in all its forms and expressions and difficult to summarize in a few words. Nevertheless, such a phenomenon in a relatively short time-span introduces significant changes in landscape use and population. Many sites, despite their eventual strategic and economic importance, were abandoned while a consistently limited number of settlements concentrated large populations in one location. The Cimino hillfort belongs to this large number of sites that were abandoned at the end of the BF. In this specific case it is not only archaeology, but also written sources that confirm the lack of further habitation at the site. According to the Roman historian Titus Livius (Titus Livius *Ab urbe condita* IX.36) the Cimino area at the end of the fourth century BC and beginning of the third century BC was in fact already a very thick and impenetrable forest. Therefore, it seems a significant case study for shedding new light on the background of the Italian proto-urbanization phenomenon.

The Monte Cimino hillfort

Monte Cimino is the highest mountain (1053 m a.s.l.) in the

Tuscia (or Viterbo province, Fig. 1) region. It stands high above the surrounding area, with steep slopes towards the plain. Due to its position and elevation it represents a strategic viewpoint over the region and the Tiber valley, north of Rome. The main reasons behind the population of the area lie most likely in the defensive and strategic opportunities it offers (e.g. Iaia 1994, 1999). On the summit of the mountain there are monumental remains of a BF hillfort. The site became known to archaeologists as early as the end of the nineteenth century (Cozza & Pasqui 1894). During the 1970s and 1980s a few survey projects suggested that the extent of the settlement, now confirmed, was approximately 5 hectares (e.g. Di Gennaro 1986). Thanks to collaboration between Rome University La Sapienza and the Southern Etruria Soprintendenza, a team of archaeologists and students have carried out excavations on the summit of the mountain for the past four years (Barbaro et al. 2011; Cardarelli & Trucco 2010; Cimino 2012).

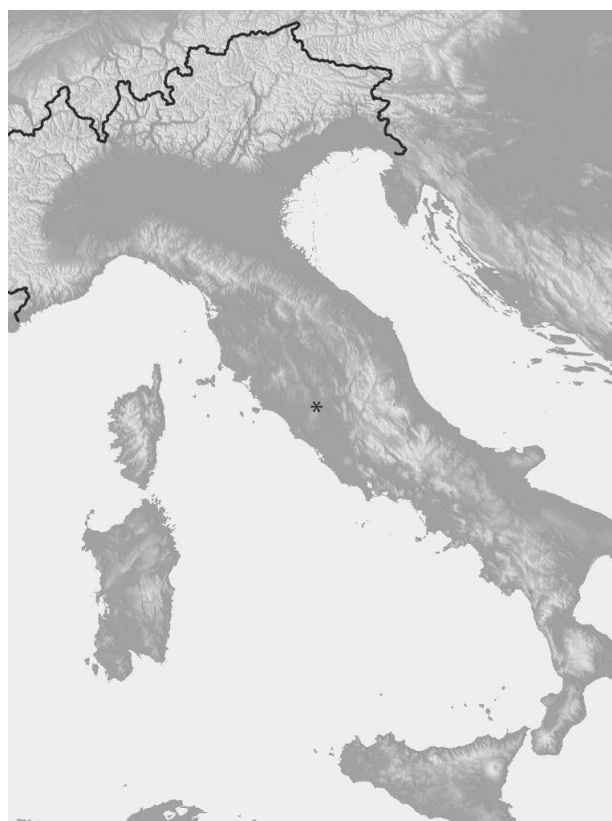


Fig. 1 Map of Italy with the Cimino hillfort in evidence.

¹ The Italian Late Bronze Age is currently divided into *Età del bronzo recente* (BR) and *Età del bronzo finale* (BF). The latter which is of interest in the case of Monte Cimino spans between the twelfth and the tenth centuries BC and corresponds in terms of central European chronology to the Hallstatt A1-B1 periods (cf. e.g. Carancini et al. 1996; Hänsel & Hänsel 1997).



Fig. 2 Terrestrial laser scanning at Monte Cimino. Photo: Martin Fera.

Today, the summit of the mountain is covered by a dense secular beech forest protected as a natural reserve of rare beauty. The morphology of the area and the presence of the impressive trees do not allow for excavation of large surfaces. The ongoing archaeological investigations focus on two areas in particular: the very summit of the mountain (sector 1, see Barbaro et al. 2011: 612-613) and one along the eastern ridge of the top plateau (sector 4, see Barbaro et al. 2011: 614-618) which reveal fragmentary, but significant, information about the site. The stratigraphy and the materials from sector 1 suggest the existence of a cultic area where regular ritual activities were taking place. At the same time the impressive stone work dug out in sector 4 shows the existence of a complex defensive structure, including walls, ditches and ramparts surrounding the citadel, with at least three phases of construction and adjustment datable to different chapters of the BF (Barbaro et. al. 2011; Cardarelli & Trucco 2010; Cimino 2012).

New sectors might be opened during the coming seasons. However, the problem of a comprehensive understanding of the site morphology and topography remain unsolved, not least due to the difficulties imposed by the forest and the geography of the mountain. It is for this reason that the application of airborne and terrestrial laser scanning of the hillfort was proposed. It will provide useful and otherwise unobtainable (with traditional land analysis methods) information. It might also help in the individuation of profitable area to investigate through traditional archaeological excavation.

Monte Cimino Laser Scanning Project

One of the main goals of the project is the acquisition of a high resolution digital terrain model (DTM) of the Monte Cimino site area, which will act as an aid for the understanding of the topographic situation of the site as well as an inventory of heretofore unknown or poorly defined site features. Traditional terrestrial surveying methods involving use of geodetic total station and GNSS (*Global Navigation Satellite System*) receivers have been difficult to implement at the site due to a combination of heavily variegated terrain and dense woodland (see e.g. Fig. 3a). Therefore, a large component of the site has yet to be accurately mapped. A detailed and complete topographic model of the site area would enable archaeologists to have a clear picture of the surficial remains of the site, as well as acting as a valuable resource for management, visualization and communication of the site structure in both academic and public venues.

In order to create an accurate elevation model, including the measurement of remnant features of archaeological interest, we propose a combination of airborne (ALS) and terrestrial laser scanning (TLS) data collection, methods which will ensure fast, accurate and detailed collection of topographic and cultural surface data. Laser scanning, sometimes referred to as LiDAR (for Light Detection And Ranging), has seen increasing use in archaeology over the past decade, progressing from a novel form of data collection in the early part of the century to a truly viable component of data collection methodology in many facets of archaeological research (cf. Motkin 2001; Neubauer et al. 2005;

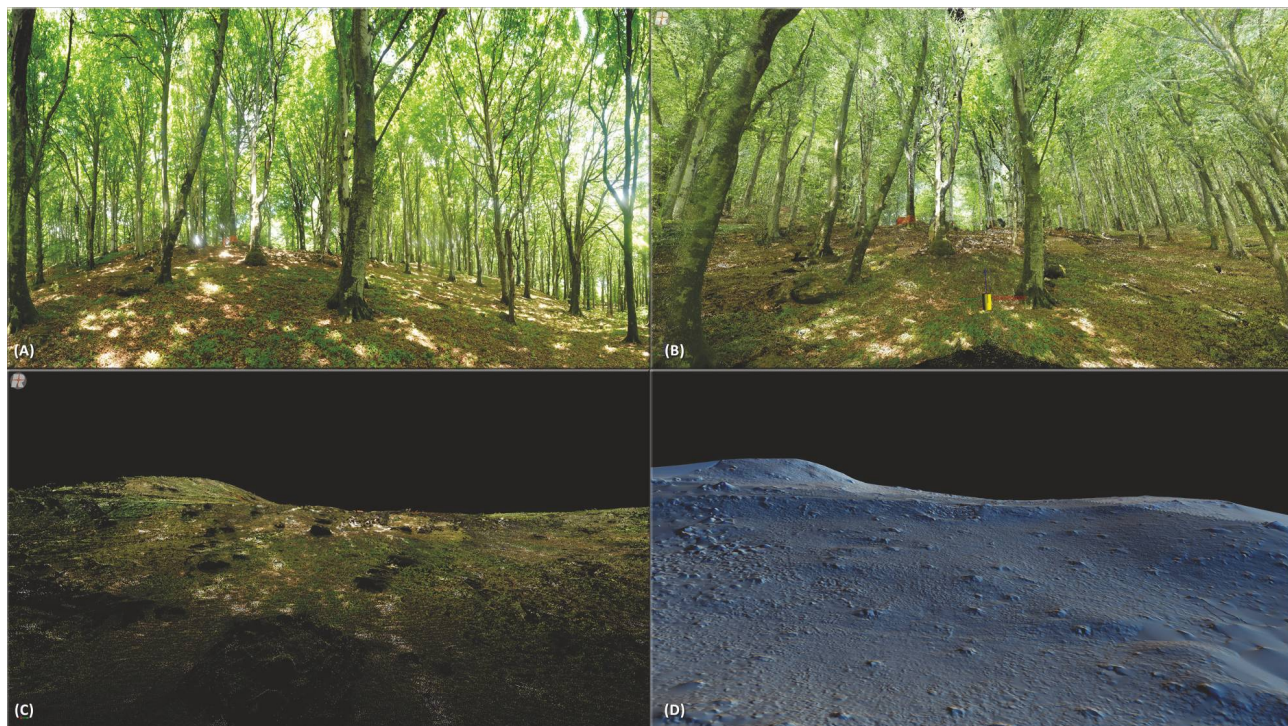


Fig. 3 (a) Photograph of one of the chosen test areas at Monte Cimino (the eastern ridge of the top plateau)
 (b) Unfiltered point cloud, from the same perspective
 (c) Point cloud after filtering
 (d) Surface model generated from filtered scan data

Trinks et al. 2005; Sittler & Schellberg 2006; Crutchley 2010). LiDAR is an active measurement technique which provides direct distance measurements through the illumination of a target surface via laser pulses (Vosselman & Maas 2010). The resulting dataset, commonly referred to as a point cloud, consists of a highly dense set of three dimensional vertices which together describe the surface of an object or area being scanned by the LiDAR process.

Recent advances in the ability of laser scanners, particularly ALS devices, to penetrate dense vegetation and forested areas have resulted in a significant improvement in archaeologists' ability to use laser scanning as a feasible and rapid tool for the detection of archaeological features in these types of environments (Doneus et al. 2008, 2010; Lasaponara et al. 2011). This is due to both a greater density of point collection from LiDAR sensors as well as improved digitization techniques which allow for increased ability to classify laser scan data and to accurately filter the results in order to remove data which are not of interest (Sithole & Vosselman 2004; Werbrouck et al. 2011; Yongquan et al. 2010) and generate subsequent terrain models from the results. These techniques have been applied successfully in a number of similar cases, including heavily forested areas in Austria (Doneus & Briese 2011) and southern Italy (Coluzzi et al. 2010; Lasaponara & Masini 2009; Lasaponara et al. 2011), and their successful application in these contexts serves as a proof of their applicability to this project (cf. Doneus et al. 2010).

Pilot study at Monte Cimino

In July of 2012, project members² conducted a one week season

² S. Sabatini (Göteborg University), C. Sevara, M. Fera, J. Kainz and P. Schneidhofer (University of Vienna).

of data collection, using terrestrial scanning equipment to obtain preliminary measurements of the hillfort area (Fig. 2). Although this was not the ideal time of year for a laser scanning project, a number of factors specific to the environmental context at the site made an initial season a necessary precursor to the undertaking of any large scale data collection campaign. These included evaluating the heavily variegated topography and geology of the site as well as the moderate to dense vegetation conditions produced by centuries of beech forest growth. Both of these conditions complicate laser scanning efforts by requiring more scan positions to be set while simultaneously capturing a large amount of vegetation data which must be subsequently filtered away. In total, five days were spent at the site, in which a large quantity of test data was acquired along with a better understanding of the specific requirements for a project of this nature at a site like Monte Cimino.

Scanning Methodology

After arrival at the site, a sitewalk was conducted in order to become better acquainted with the site layout and to estimate the number of scan positions which would be necessary in order to cover the chosen test areas. Scans were collected using a Riegl VZ-400 Terrestrial Laser Scanner measuring in Long Range Mode. A 0.06 degree scan increment combined with a measurement rate of 42,000 points per second and a maximum distance of c. 650 m resulted in point clouds averaging over 12,400,000 points per scan position. As the scanner collects data in a radial manner, the point density decreases the farther each return is from the scanner point of origin. Moreover, upstanding objects in the path of the scanner such as trees and boulders occlude the scanner beam, creating 'shadows' devoid of data on their reverse sides. Therefore, each scan position was carefully chosen in order to ensure an overlap

which would fill in any gaps or shadows in preceding scans. Reflective tie-points, georeferenced using a geodetic total station, were used to position the scans in a global coordinate system and to link the scans together.

A total of 33 successful scans collected over four days yielded a point cloud of over 410,000,000 datapoints prior to filtering (Fig. 3b). Since an estimated 70-80% of the measurement points collected by the scanner were reflections from vegetation surfaces, they were filtered out of the final model (Fig. 3c) during data processing. This high percentage of points which are not useable for terrain reconstruction emphasizes the need to collect data from multiple complimentary positions in order to compensate for the high degree of scan shadow caused by such heavy vegetation. However, it is clear that even though reflections from vegetation comprise much of each individual scan in this context the subsequent filtered point density still far exceeds anything achievable via traditional land survey instrumentation. In just four days of data collection, enough usable terrain points were collected to generate surface models of extremely high resolution in the three chosen test areas at Monte Cimino (Fig. 3d).

A number of the scans were also positioned so as to collect data from the open and ongoing excavations at the site. This was done in order to acquire scans of the original cultural surface of the site, as well as to help the excavation team by documenting the complex surfaces present in the trenches. Future work at the site will also focus on this very important aspect of data collection. As can be seen in Figure 4, preliminary surface models generated from scan data can already be used to detect linear features, such as the retaining wall which is thought to encircle much of the site and is visible in the excavated segment of Sector 4. Despite being just a preliminary hypothesis which will be investigated in greater detail during subsequent project seasons, we seem to already have some very interesting results. The laser scanning technology also provided possible evidence for a downslope from sector 4, which may indicate artificial terracing, making for a very complex use and management of the local landscape.

Data Processing

After each field day, scan datasets were downloaded from the VZ-400 to RiSCAN Pro, where scans were checked, georeferenced, coloured and filtered. Any errors or inconsistencies in positioning were noted and corrected during the following field day. Georeferencing data were transferred from the total station and referenced to the tie points, which served to connect scans taken in disparate locations together as well as to link the scans to the 'real world' via a known coordinate system. Colouring was carried out by transferring colour values from pictures taken subsequent to each scan to the point cloud in order to create a more photorealistic effect. One issue encountered here was that due to the uneven lighting conditions in the forest, it was often difficult to acquire adequate photographs for colouring and texturing scan data. This will have to be addressed in future seasons. Finally, vegetation was filtered from the linked and coloured point clouds using advanced terrain filtering functions which allow for the semiautomated detection and removal of scanned vegetation. Remnant segments of trees (Fig. 4) and other vegetation can, however, still be seen in the surface models. Further refinement and development of the filtering process will address this issue in subsequent project seasons.

Once the scan data were processed, the datasets were imported to ESRI ArcGIS 10 for surface modelling. All scan and other project

data collected have been stored and analysed in a Geographic Information System (GIS) environment. This will serve as a central repository for any additional spatial data collected during the project, and will allow project members easy access to the datasets from diverse locations. This is especially important due to the distributed nature of the participating institutions. Furthermore, a centralized storage system for geodata will allow excavation teams and future projects to easily connect their datasets and integrate data collected by the Cimino laser scanning project into their research.

Conclusions

Although the results from the 2012 season are impressive, there is much more work to be done at Monte Cimino. Preliminary results show that a directed terrestrial laser scanning campaign using the latest in scanning technology will be the fastest way to create a DTM and 3D plan of the site with enough resolution to help answer topography-related questions about the site structure. As seen in Figure 4, a relief model generated from laser scanning datasets already displays prominent site features at a speed and resolution difficult to achieve using other surveying methods. However, further refinement in vegetation processing and filtering techniques will be necessary in order to achieve a more accurate digital height model of the site.

In future seasons of the project, a directed airborne laser scanning campaign will provide a detailed topographical dataset of the wider surroundings, helping to form a multiresolution model which can be used for many different levels of analysis. Additional data will be collected with terrestrial laser scanners, to produce a high resolution model of the site and its immediate surroundings. Both of these aspects of the project will need to be conducted during periods of low vegetation growth in order to achieve optimal results. Further scanning of ongoing excavations will also provide corroborative data which can be used for cultural and environmental reconstructions of the Bronze Age site. All of these components will be integrated in a geospatially oriented environment, allowing researchers to use the latest technology to reveal what lies beneath the beech forests of Monte Cimino.

Final remarks

The proto-urbanization of central Italy involves a deep re-adjustment of the local political and cultural balance, a growth of cultural complexity which is already observable in the earlier part of the Italian Late Bronze Age (see Iaia, this volume, with references). The population of highly strategic and complex BF site like Cimino, where impressive work was apparently undertaken to manage the terrain, does not survive those big changes. Instead, they favour other locations and much larger surfaces where bigger populations can live together. It is a process which, in a relatively short time span, would lead to the later Etruscan town and to the birth of Rome (cf. e.g. Fulminante & Stoddart 2012). The mechanisms of this phenomenon were certainly manifold and are likely to have been embedded in the larger continental framework and the growing networks with Central and Northern Europe (e.g. Iaia 2013; Kristiansen & Larsson 2005; Peroni 2004). The issue is decidedly exciting and far-reaching.

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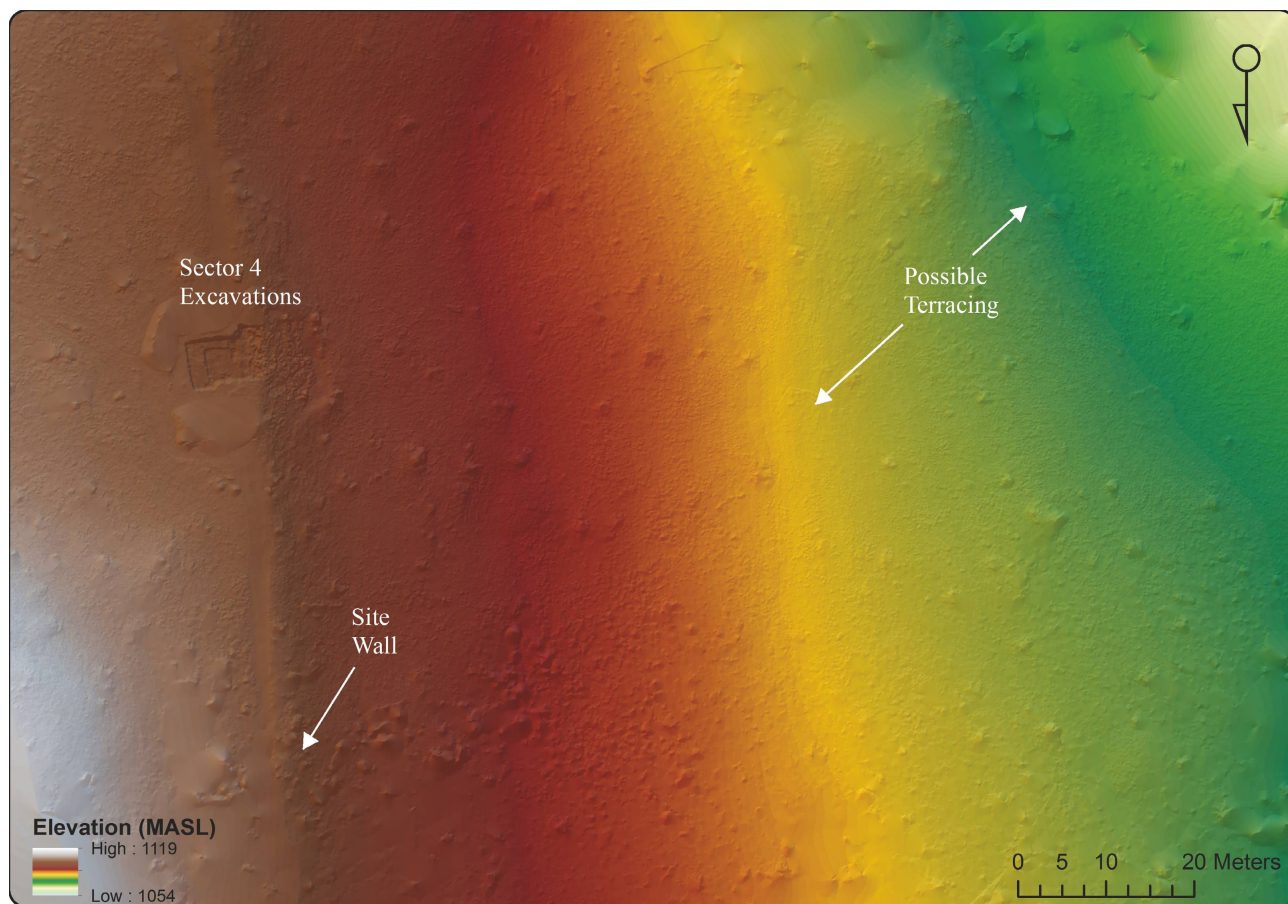


Fig. 4 Model of wall segment from sector 4.

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CONSTRUCTION ARCHAEOLOGY, FIELDWORK AND THEORY

Marianne Lönn and Håkan Petersson

Abstract: The aim of this contribution is to discuss construction archaeology and fieldwork in relation to theory and the deductive archaeological process. In order to do this one needs to know more about the principles of fieldwork, which means one needs to analyse fieldwork in a theoretical way. Such analysis should not focus on descriptions of different methods or on construction manuals on how to excavate, but rather upon questions like: What is experience? How does the conception of something come about? How does knowledge grow? Where does it start? How is knowledge communicated and to whom? What forms an interpretation? To what extent does theory influence interpretations? Is historicity a problem? In this article we look at those questions and analyse the thoughts and historicity behind interpretations. The conclusion is that both a deductive and an inductive way of working can be applied depending on the situation. Empiricism is often needed. Also, it seems that the bridge between theory and material is nothing but the archaeologist.

Keywords: construction archaeology, fieldwork, theory and material, creation of knowledge, communication of knowledge, interpretation, historicity, empiricism, inductive work, archaeological process

Preface

As contract archaeologists we feel that there are expectations, our own as well as those of others, to combine theory and material. But, at an excavation, literally standing with our feet on the ground looking at a dark spot or a dirty piece of pottery, the leap to the studies of sociological models of Anthony Giddens or Michel Foucault is a bit too alienating. We also find ourselves forced into, almost imprisoned in, a formal deductive way of working that does not take into consideration the special conditions of contract archaeology. Specifically, a strict deductive work process is not plausible because of all the surprise finds and the constant need to change excavation plans. After several years of trying to adapt to an inadequate system, we have accepted that the realities of contract archaeology are what they are. We want to better understand these realities, and analysing fieldwork as it is performed in contract archaeology is the beginning of this task. It is hoped that a better understanding will eventually lead to a better work process.

The article below is a continuation of a discussion in two earlier works by Marianne Lönn (2006, 2012). The latter is an article that resulted from presentations at the EAA in Zadar and TAG in York in 2007. Some of the case studies are the same since they are just case studies stressing what we wish to outline, while new ones have also been added and the arguments have changed and developed.

Theory and material

Forty years ago theory changed archaeology. The New Archaeology started an ongoing debate that has given us a multitude of theoretical perspectives in an ever-changing flow. Archaeology has become theorized and has developed largely for the better. The New Archaeology introduced in the late 1960s, as well as the ‘-isms’ after that, such as Marxism and structuralism, prescribed theoretical thinking and theoretical models for interpretation. This created the need to connect theory and material, since the demand for empiricism was still deeply rooted in archaeology, something that is not always the case today. The problem was defined early on and the concept of Middle Range

Theory was introduced in 1977 in Lewis Binford’s introductory article in *For Theory Building* (see also review by Schiffer 1980).

In those days there was considerable interest in developing and discussing theoretical ways to expand the potential of archaeology. The journal *Advances in Archaeological Method and Theory* (edited by Michael B. Schiffer, Department of Anthropology, University of Arizona, Tucson, Arizona) is just one example. The first issue appeared in 1978 and the series ran until 1987. Many articles were published there which were important for the development of archaeology. The journal *Advances in Archaeological Method and Theory* was followed by *Archaeological Method and Theory* (1989-1993) and *Journal of Archaeological Method and Theory* from 1994, still with the same editor, Michael B. Schiffer. There have also been seminal discussions about Middle Range Theory itself, for example the article ‘Middle-Range Theory in Archaeology: A Critical review of Origins and Applications’ by Raab & Goodyear (1984) and in the book *Archaeology and Modernity* by Julian Thomas (2004).

Unfortunately, one crucial part of archaeology has too often been omitted from the theoretical debate: fieldwork. Analysis of fieldwork itself, and a better understanding of the mechanisms behind the growth of, and communication of, knowledge in fieldwork, as a fundamental issue for revised knowledge of prehistoric societies is, in our opinion, missing.

Alongside the theory-building, fieldwork developed in its own way, which has been rather un-theoretical. New methods have come into use, new kinds of analyses have been brought in and digital measuring, plotting, drawing and analysing have helped us gain greater insights. A consequence of these two developments is the creation of something like two different archaeologies with different skills and values (see Hodder 2006). With only slight exaggeration one can say that there are two kinds of archaeologist: one with a career in academia where theoretical discussion, often with a loose connection to the empirical material, its obstacles and complexity, takes place and where a thorough insight into philosophical theory is needed; the other has a career in construction archaeology where a firm knowledge of the archaeological material and excavation experience is necessary.

It seems that the distance between theory and material has become an institutional problem.

The difference between the two archaeologies has been further emphasized due to the remarkable development of construction archaeology during the past decades, at least in Scandinavia. Not only has it grown to be the major part of archaeology in terms of volume, but today it is carried out by highly skilled professionals, several with higher academic degrees. This means that there is more research done, higher expectations for the results coming out of an excavation and more demand for theory. Also, many realize that everything is not quite as simple and clear-cut as the theory lessons at university led us to believe.

In Sweden there is an ongoing discussion about how to direct the enormous amount of new material each year into certain fields of investigation, i.e. how to make it accessible and relevant to knowledge in a broader sense. There are also discussions about the differences between university archaeology and construction archaeology; about research in general within construction archaeology and about the practice of archaeology in the field (for example Andersson, Lagerlöf & Åkerlund eds. 1999; Ericsson ed. 1999; Anglert ed. 2001; Bolin, Kaliff & Zachrisson eds. 2001; Högborg & Rudebeck 2001, Berggren & Burström eds. 2002; Baudou 2004; Ersgård 2006; Lönn 2006).

Discussions such as these, and the ones held in sessions at the EAA in Zadar, Croatia 2007 and TAG in York 2007 (Cobb, Harris, Jones and Richardson eds. 2012), together with discussions between colleagues, have shown that there is a great need to delve deeper into the old Middle Range problem from a construction archaeology point of view.

Creating knowledge

Fieldwork is the basis of construction archaeology and is therefore the most important thing to understand. We need to concern ourselves with questions like: What is experience? How does the conception of something come about? Where does it start? How is knowledge communicated and to whom? What forms an interpretation? All these are difficult questions, but the hope is to provide some ideas concerning how one can work with them and perhaps also present some answers.

The best way to answer questions like those described is to take a look at actual examples from fieldwork. That is where one can follow a series of events and understand what has happened, where one can figure out how and why something has happened.

The discovery of Mesolithic huts in Sweden

There has long been a discussion about the construction and identification of prehistoric huts, especially Mesolithic ones, among archaeologists in Europe. In Sweden the discussions have often dealt with questions of how to interpret the structures as huts, dwellings or other archaeological features since natural transformation processes have also resulted in contradictory or uncertain features (see Carlsson 2008:152-177 for a summary in English). In this article we will focus on the process of learning and identifying the object, i.e. possible remains of huts in fieldwork.

In 1988 a strange feature was observed at an excavation in western part of Sweden. Something had been buried in the ground and in

a section a distinct dark figure with a sharp edge in one side was visible (Fig. 1).

The archaeologist in charge, Eva Schaller Åhrberg, had not seen anything like it before despite her extensive experience as a field archaeologist specializing in the Mesolithic. Not knowing what it was, she asked around. Many came to look and discuss, but nobody had any idea how to interpret it.

A few years later, in 1994, an oval dark spot was detected in the midst of an area with Mesolithic find material, mainly flint. The archaeologist in charge, Bengt Nordqvist, interpreted the remains as a Mesolithic hut (Nordqvist 2005). The interpretation caused an intense debate and many dismissed the interpretation. Among the participants at this excavation, as well as in the debate, were Eva Schaller Åhrberg, Robert Hernek and Glenn Johansson. Their participation was later shown to be of great importance and the experience was vital when, in 1997, Hernek and Johansson identified an oval dark-coloured feature of 5 m x 4 m and 0.25 m deep.

Because of the earlier experience they thought of it as more than a pit, and thereby investigated it thoroughly and were guided by another mental preconception. The feature was embedded into the ground and its profiles at the sides looked just like the feature discovered by Eva Schaller Åhrberg in 1988. This one also contained post-holes, hearths, cooking pits and a flint material that clearly showed that it was a cultural feature and of prehistoric origin (Fig. 2). Five unanimous carbon dates dated it to the Mesolithic, 7500 – 7000 BC (Hernek 1998). The feature was interpreted as the remnants of a hut, with a floor that had been sunk into the ground. This time very few colleagues doubted the interpretation.

The following year yet another locality with possible hut-remains was found by Glenn Johansson. This time the features could not be discerned as a recognizable structure and the interpretation was built on coherent distribution patterns of phosphate values, stones and flint material distribution patterns. It was much discussed among colleagues, especially when carbon dates placed it in the Early Iron Age (Johansson 2003). Hut or no hut, it was the earlier experience that made Johansson see the possibility and specially look for traits and evidence that could strengthen the interpretation of the features as huts. Without his former knowledge and experience, this site most likely would have become yet another of the numerous flint-sites without any structures.

Based on earlier experiences and discussions yet another possible Mesolithic hut was found in 2007, and today there are even more. Now we know what the remains of a Mesolithic hut in this part of the world looks like and what to look for when excavating

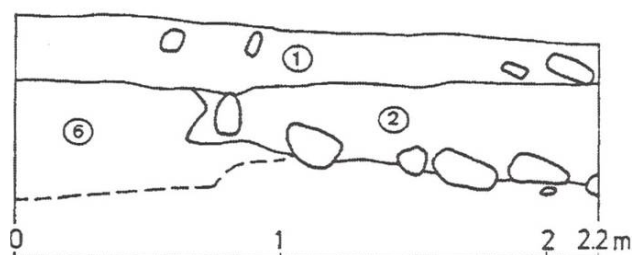


Fig. 1 The elusive feature. The area marked 2 is the dark-coloured feature. From Schaller Åhrberg 1996:14.

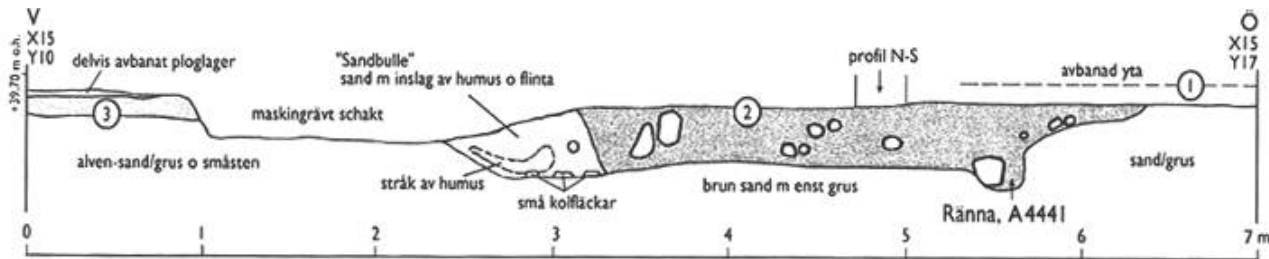


Fig. 2 Profile of a Mesolithic hut, RAÄ 140, Forshälla socken, Bohuslän. From: Hernek 1998:27.

Mesolithic sites. There is also an acceptance among colleagues about this; even though there is still some disagreement as to whether it was a dwelling or not.

In the example above we have deliberately used personal names to underline how the development of thought is built on very personal views and experiences. The knowledge being personal is something that must be acknowledged, but there is really no way around it. In the beginning of the process we must rely almost totally on personal, visual memories and personal experience.

Principles of cognition

As earlier described (Lönn 2006, 2012) and seen in the examples, the following principles of cognition can be seen when analysing the growth of knowledge:

1. *Cognition of a phenomenon.* We know that the area has been settled by people during Mesolithic times and we understand that they must have had a home, a dwelling, to live in. But, we do not know what it looked like in the past, or what it looks like today, and we have never seen and comprehended such a place.
2. *Suggestion of interpretation of a phenomenon.* Someone with experience of different phenomena within field archaeology or with a similar experience from a different context realizes that a certain feature might just be the remains of a hut.
3. *Visual memory and a mental preparation are established.* The archaeologist that sees and discusses the new feature and its interpretation acquires a new image in his/her experience of what a possible Mesolithic hut could look like and creates a visual memory of this.
4. *Identification of the phenomenon as a categorical find.* The next time a similar kind of feature turns up, archaeologists who have seen it before or heard of it will be prepared for such an interpretation. If this is done early in the excavation process, the excavation method can be adjusted and the remains analysed according to such an interpretation.
5. *Confirmation by additional finds.* Subsequent finds will also be compared with the earlier ones. They will be accepted or rejected in relation to the current knowledge, but they will also add to the present knowledge. The image of a possible Mesolithic hut will become more elaborated in shape and form.
6. *Known and accepted phenomenon.* When the archaeological community has accepted the interpretation, it will become credible and in the future it might even become the accepted truth. A line of analogies will be established that makes it possible to present suggestions of other features from

much more diffused contexts based on common traits. This is also when the hard facts required by the archaeological community will start to decrease to the level of questioning what we actually see or want to see. This has been observed on numerous occasions within our areas of interest and research (see for example Petersson 2010).

Our opinion is that visual memories are necessary for interpretation in archaeological fieldwork (see also Bradley 1997). The more memories, the more fieldwork experience an archaeologist has, the better the interpretations. The reason visual memories are so important is because the archaeological material is a physical material seen and found in the ground. Most discussions about phenomena boil down to the question: What does it look like in the ground? There is no help to get from theories or a strictly deductive approach to interpret such a phenomenon. They have to be dealt with when they are found. Therefore visual memories/fieldwork experience and theoretical knowledge are of equal value on the path from a find to the comprehension of a complex prehistoric society.

The importance of visual memories

The importance of experience and visual memories was evident when Gundela Lindman proposed that layers in the ground at the site Munkeröd in Bohuslän was evidence of slash-and-burn cultivation (Lindman 1993). The site contained layers with soot and charcoal alternating with layers of sand and soil. The sooty layers were dated to different periods of time from the Neolithic to the Medieval. There were seeds from weeds and cereal in some of the layers (Fig. 3).

We believe the interpretation was made only because Lindman had previously conducted research on exactly the same phenomenon but from historic times. At the time she had not seen any prehistoric examples, but was mentally prepared for it and had a visual memory of what things like that could look like. That made it possible to conceive of such an interpretation and adjust the excavation strategy and methods to test the hypothesis (Lönn 2006).

The process of cognition

Seeing the development of knowledge as described above, it is a process that runs from a first recognition of a phenomenon to a known and accepted phenomenon. Sometimes the process runs its course, sometimes the chain of events is cut off before reaching the stage of acceptance. There are different reasons for this but

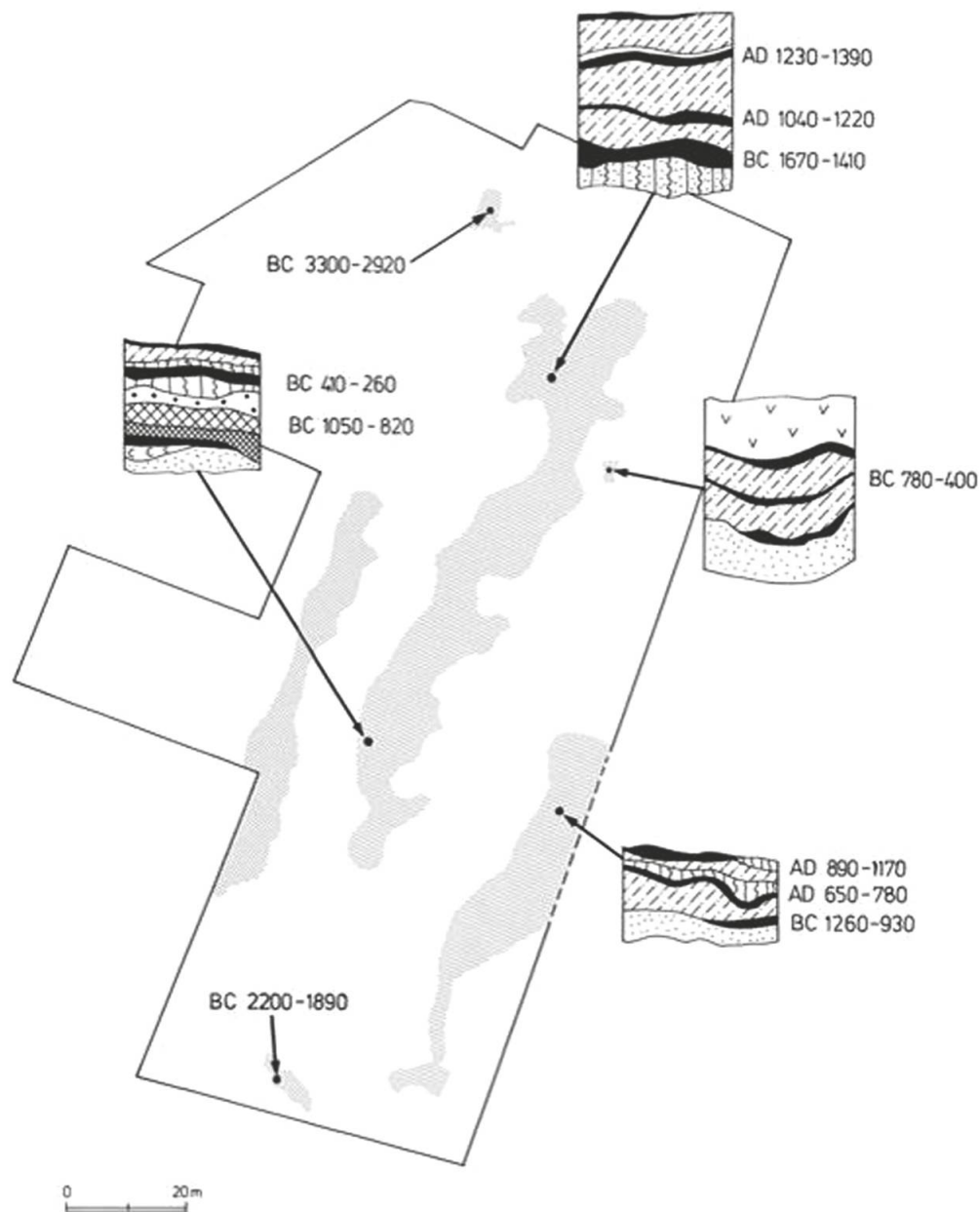


Fig. 48 Dateringar på etapp I-området, kalibrerade värden.
Dates from the stage I area.

Fig. 3 Sections of trenches and results of carbon dating. From: Lindman 1993:64.

usually it depends on a lack of additional finds to confirm an interpretation.

In 1975 a stone-covered hillock with two possible graves was found on the top of a small hillock in the outskirts of Gothenburg. The site is called Tuve 65. Every crevice was filled with stones and there were stones laid around the base of the hillock as a brim (Fig. 4). Among the stones were Neolithic flint, pieces of Bronze Age and Iron Age pottery, soot and charcoal (Andersson 1976). At that time, nothing like this had ever been seen and the interpretation was rather uncertain. It might be something cultic. Also the date was uncertain since the Neolithic flint did not fit together with the pieces of pottery from later periods.

The process of knowledge-building was cut off, mostly because of

a lack of comparisons. The next step in the chain of events did not occur until some twenty years later in 1998 (Munkenberg 2003) when something of the same kind was found. It was a rather high, oval hillock with a broad brim of stones around its base (Fig. 5). Since then, more stone-covered hillocks, mountainsides and hilltops have been found. They are different in size, appearance, dates and location, but they all contain a hillock or a part of a mountain more or less covered with stones; they all have some connection to graves and most of them were built in the Iron Age.

We were still not certain as to the interpretation or interpretations and we certainly did not understand their historical and social contexts. It was also intriguing that they were similar, yet different. The earliest one found, Tuve 65, was still unique. The others were not as big, did not date to the same time or utilized different



Fig. 4 The stone-covered hillock. From: Andersson 1976:139.

materials, and did not produce as many finds. Then in the summer 2011, 36 years later, it happened. A new site, almost identical to Tuve 65, was found only a kilometer away. Marianne Lönn was supposed to excavate a settlement with a thick cultural layer and a few possible graves on a small ridge. The new site is called Tuve 46. Luckily, Lönn took part in the excavation at Tuve 65 and hence she had visual memories of that monument. Already on the second or third day when taking the turf away and uncovering lots of stones, her memory made her realize that this was indeed a stone-covered hillock with a brim similar to the one she observed 36 years ago and not a peculiar settlement site. Because of this early realization, the excavation method could immediately be changed to suit the situation. Thousands of pieces of flint and potsherds were found among the stones and there were graves and a variety of strange, not yet interpreted, features. Similar to the earlier monument like this, it had been used from the late Neolithic/early Bronze-Age to the Migration Period, i.e. during a time-span of 2,500 years.

It has been a long wait for plausible interpretations, but maybe there will be some answers soon. The stones upon and around the hillock seem to cover collections of knapped flints, many bifacial, and these collections probably represent the places where the flint was knapped. Later on graves and possibly different cultic structures were placed on the hillock. At the moment, we do not know if there was a connection between these events. It is hoped that we shall know more once the results are fully analysed.

Today, many archaeologists are intrigued by this phenomenon of stone-covered hillocks and the like and take part in the discussions about them. Now we know what to look for and where to look for it. After the latest find the discussion is taking a new turn. We see differences between the sites and are starting to understand the complexity of this type of remains.

In the case of stone-covered hillocks there were several reasons for the halt in the process of knowledge-building when the first find was discovered. First of all, the find was a total surprise and there were no known finds with which to compare it, thus there was no mental preparation for such a find. The discussion was very confused and the interpretation had to start from scratch. Furthermore, the theoretical views of the time favoured functional interpretations and such an explanation was difficult, even impossible, to find. Thus, the cultic interpretation was not pursued

until the next one was found in 1998, when the theoretical debate was also more amenable to such interpretations.

This change in the theoretical prerequisites for interpretation has had consequences for the discussion about other phenomena as well. More recent research in Bohuslän, as well as other places in Scandinavia, regarding the features known as *cooking-pits* has shown that they are not only a profane, typical settlement site activity. They can also be seen from another point of view where they are connected to certain landscape features such as cliff walls, or water boundaries like streams, rivers and shores. The cooking-pits can also be arranged in rows constituting large fields. Historically they have been considered rather uninteresting, excavated in different ways, often documented in diverse manners and in a routine fashion where the features have been seen as an obvious place for cooking. Today we know they are not. In special circumstances they have also had other, for example cultic, explanations. Due to some extent to historical reasons, we today lack statistical data to build research and get answers according to the new facts and the new potential our fresh knowledge of the phenomenon has given us.

The research is therefore at a halt. This is partly due to the deductive approach forced upon contract archaeologists by the authorities due to legislative and administrative rules. The sites in themselves must be able to present answers to predefined questions and theories, which in this and other cases, with the present knowledge and a variable strategies in excavation and documentation, is seldom possible.

What is needed in this particular case is a more or less unbiased programme for data collection so that the material can gradually be processed in larger quantities to present trends and unseen structures within the analysed material. This could then create new answers and new ways of studying the cooking-pits. Here, as well as in other topics of contract archaeology, an inconclusive result is also an important result, since these can contribute to revealing trends and differences between periods and/or types of sites later on.

In this respect an excavation can in itself be an inductive element in striving to collect data for the future. The site will then be important as a means of creating raw data that together with similar data from other sites gives us comprehensive material of statistical significance from which conclusions may be drawn, instead of only being interpreted in isolation from its own context. However, today the latter is the prerequisite requiring the deductive approach in contract archaeology, despite its prime purpose being to find whatever there is to be found.

In contract archaeology surprises and unexpected finds are very typical. It is the nature of contract archaeology. We are to find and take care of whatever finds there are where exploitation is coming about. We are not able to choose a spot where we may find the answer to a certain problem. We must approach it the other way around: we find something and connect it to a certain problem. Sometimes we find answers to questions that have not been put forth. That is the real challenge. Of course we know the potential of a landscape and most of the time we know fairly well what we are about to excavate. But there is more. There are many things in prehistoric society that we do not have a clue about. We would have a better chance of finding them if we could be a little more open-minded about an inductive approach and perhaps try new methods, other analyses, different documentation strategies, just to see what happens.



Fig. 5 Example of a stone-covered mountain top. From: Lindqvist & Toreld 2005:55.

Interpretation and theory

Seen from the point of view of fieldwork the road to comprehension of prehistoric societies runs from material to visual memories and experience and further on to communicated knowledge, interpretation, hypothesis and then on to comprehensive theory and knowledge. Theory is always there in the minds of the archaeologists; from their educational background, their experience and their discussions and so on. Of course this influences the interpretations. So, sometimes intentionally and sometimes unintentionally, interpretation of material, dating, contexts and the like is affected or even determined by theory.

New results concerning a very special kind of ceramic pot sheds light on the theory behind the interpretation. The pot in question can be found in the western part of Sweden and Norway, mostly on the south and west coast, from Trondheim to Bohuslän. The clay is generally blended with soapstone and the vessels have a special form: each is shaped like a bucket and is very finely decorated. This kind of ware is distinctive (Fig. 6) and the objects in question are called bucket-shaped vessels (in Swedish: *spannformade kärl*).

The core area for these vessels is the area around Stavanger in Norway, where the oldest pots have been dated to the late Roman Iron Age (AD 300-400), but most pots are dated to the Migration Period (AD 400-600). This dating also applies to vessels from the eastern coast of Norway and Bohuslän. The core-area is considered to represent the place of origin even if there are some discussions about influences from other areas. Furthermore, the dating was proposed in the early twentieth century and was based on typology. It does not seem to have been questioned since. Thus the dating of this pottery depends on typology and a diffusionist way of looking at the distribution of goods and ideas (see for example Breivik 2006; Bøe 1931; Magnus 1975; Kristoffersen & Magnus 2010).

In 2007, an almost totally demolished grave was excavated in the northern part of Bohuslän. One of the few things that had escaped destruction was a decorated, bucket-shaped vessel filled with burned bones and it was still standing intact in a hole in the middle of the grave. There was just one thing that did not fit the picture: its probable age. Carbon dates from the burned bones in the vessel and from charcoal from different structures in the grave together indicated a mid-Roman Period dating. Pieces of pottery left in the grave supported this (Lönn 2009, 2010).

If we stay with the accepted dating and spread of bucket-shaped vessels, this person, a woman in her twenties or thirties, was buried in a pot that was around 500 years more recent than the woman herself. Possible explanations have been discussed such as false carbon dates, wrong identification of the pot and re-burial of the woman, but there is no evidence indicating any of this.



Fig. 6 Bucket-shaped vessel

How, then, do we explain these seemingly impossible results? In our view, it can be explained if we disregard the theory behind the previous dating: the diffusionist view of the spread of goods and ideas. If one takes social behaviour and social networks into consideration, for example exchange of gifts as a token of friendship or other relations, marital alliances and so on, there is another possibility. In such a scenario there need not be a core area that has the oldest vessels even if most of them are manufactured there. Instead the vessels are produced and used during the same period of time all over the area. With such an understanding, the woman in northern Bohuslän is part of a social network that stretches from Trondheim to southern Bohuslän. Thus, a different theoretical view creates a quite different interpretation and dating.

A major problem within contract archaeology is the lack of time for, and sometimes also interest and knowledge in, modern archaeological theories. This prevents the analysis from going beyond a material presentation and a formal comparison with the general picture of the period to a more deeply theoretical based discussion of interpretations. It is a pity since it is only then that archaeological theories of the prehistoric society meet resistance from the empirical material and the interpretations often fail to be verified. Could this be one reason as to why more pronounced theoretical archaeological studies seem to avoid empirical studies, i.e. the theoretical interpretation that is put forward tends to fail when empirically tested?

One way the contract archaeologists, at least in Sweden, have dealt with this lack of further analysis is through writing dissertations that more or less exclusively have their origins in particular archaeological excavations. Another way is to separate the reporting of larger archaeological excavation projects into one technical part and another part or parts that elucidate the scientific issues, often in special publications. But even then the theoretical debate, to some extent, seems only fragmentarily integrated.

However, in analysing interpretations the theoretical background can usually be detected. Even when there seems to be no theory involved, a theoretical valuation is there anyway. One such example was the interpretation of the first stone-covered hillock. It was influenced by the theoretical thinking of the time. In 1975, when the first structure was found, interpretations involving prehistoric conceptual philosophy and cult were not accepted, or at least were not well respected. Some decades later the values of archaeology have changed and the conceptual philosophy of prehistoric times is regarded as very interesting. Today the functional or profane interpretations seem to be ignored every time something unclear is discovered. Therefore, quite different approaches to interpretations are now the norm within archaeological theoretical debate and are taken into consideration when uncertain features are interpreted within contract archaeology.

This example also points to a very interesting aspect of interpretation: *the historicity*. How much do contemporary values, present philosophical ideas and the level of knowledge in field archaeology in general, affect interpretation? It is also interesting to see how the basis for an interpretation is forgotten or is replaced by the thinking that is popular in a given time. Field archaeology, especially contract archaeology, also represents a historicity dependent knowledge in itself. Very often older results and excavations are used and reused or re-evaluated in explaining and interpreting new finds and in discovering uncertainties in present excavations.

Communicate knowledge

Communicating knowledge most often leads archaeologists to think about books, articles, reports and the like. As seen from the example above, though, the communication of knowledge starts much earlier: it is not written, but rather comes in the form of verbal or visual communication.

There are the discussions at the excavation, about a feature which has been seen or maybe the showing of a picture. There is also the telling about earlier finds when something strange turns up at an excavation; or the call which is made to a colleague who you know has seen something like the feature that you have just uncovered. There are also the talks around the coffee table in the office or at small seminars. These pieces of information are personal, visual memories of individual archaeologists informing other archaeologists in the vicinity. Sometimes it leads to a larger arena such as workshops, symposia or national or international conferences before it becomes written words, but could just as well stay within the verbal transmission of knowledge between colleagues.

It is therefore important to understand that a lot of knowledge, especially within contract archaeology, often does not reach the written stage and only exists within the fellowship of certain archaeologists. It is an invisible knowledge, transmitted through a day-to-day learning of experience that, at best, is communicated from one field archaeologist to another. One particularly important aspect of this is to decode landscapes, knowledge about the perception, the use and the movements within the landscape. There is also knowledge such as where to find particular archaeological remains such as certain Stone Age settlement sites, ritual sites or special activity areas such as manmade stone packings, cooking-pit fields and so forth, as well as how to know what a very blurred cooking-pit or man-made stone packing look like on the surface after removing the top-soil. The information differs from region to region and is often considered so simple and obvious that there is no need to write it down. It is only passed on orally from one archaeologist to another working within that particular landscape.

The written text is only the last stage, communicating a fragment of what we know and, in the case of construction archaeology, mostly through excavation reports and sometimes further analysis in articles or books. However, articles and books mostly deal with the scientific results and not so much with finding and interpreting the basic elements. Even archaeological reports tend to miss information that is regarded as common knowledge within a contract archaeological community of a particular region.

In recent decades, at least in Scandinavia or in Northern Europe, we also have left out the publication of empirical studies: the detailed presentation of material of all sorts, something we were very successful in doing at the end of the nineteenth century and beginning of the twentieth century. In our experience such publications have been considered of minor scientific value in the increasingly theoretical discourse in present day archaeology. In one sense the trend is justified, since there is no theory or further societal analysis attached to such publications. What is forgotten, though, or not understood, is that they represent an important step in the building of knowledge. When they do not exist, every archaeologist has to start from scratch; collect, arrange and analyse all material or type of artefact by her- or himself instead of studying earlier syntheses or catalogues from earlier studies. That is an enormous waste of time, money and knowledge. In our view, the catalogues are essential for establishing and communicating

knowledge between professionals and between younger and older colleagues. This can be seen in Scandinavian archaeology since the older works from the late nineteenth century and early twentieth century are still used and referred to. They are seldom complemented with new finds and categories of finds, at least not within Swedish archaeology. The situation is somewhat different in Denmark and Germany where this kind of publication continued during the later twentieth and beginning of the twenty-first century. The reduction in publications of empirical data during the last few decades has resulted in a diminishing general knowledge about material. From a theoretical point of view, this may be of less importance, but for construction archaeology it is a disaster. A very common criticism to the academic field of archaeology, or of theoretical societal studies of prehistoric societies in general, is that it often lacks a firm empirical analysis of the material.

As we see it, there are at least three important steps to consider. The first is the excavation report; the second, the publication of material with detailed catalogues and discussions about methods and analysis including descriptions of what could be seen as 'obvious knowledge' within the field archaeology sector such as contract archaeology. The third is the publication of articles or books theorizing and/or analysing the prehistoric society as such. Among these, the second step has suffered from neglect and deserves much more attention.

At last

Of course there is a lot to do to create a complete understanding of fieldwork and contract archaeology. We only want to stress the importance of knowledge beyond the written text and the understanding of the process of knowledge-building within contract archaeology with its much unanticipated preconceptions. One of the results that we find especially interesting is the chain of events from discovery of the unknown to visual memories and onwards, that must precede the creation of new knowledge concerning prehistoric societies. The fact that we have omitted one part, the publication of material, is worth noting. That has become a great disadvantage. We also must stress the absolute need to observe and recognize the first steps in the process towards a better comprehension of prehistoric societies: the transmission of verbal knowledge among archaeologists and the importance of experience. Understanding the continuous process of learning about all kinds of material in contract archaeology should also result in an understanding that large scale excavations are not the only interesting ones.

Everything that adds to the common knowledge is interesting and new knowledge often derives from surprise finds, especially in comparison with other earlier finds. An excavation in itself can also be an inductive element, building statistical significance, i.e. striving to collect more data as illustrated in the ongoing research relating to cooking-pit sites. The sites are regarded as a means to create data that together with other data from similar sites have the potential to create comprehensive results.

The historicity behind the interpretations must also be better recognized. Such a view would more often challenge obvious interpretations and archaeological truths that exist. Lastly, we should recognize that verbal communication is an important and common way to communicate knowledge on all levels. There is an even greater necessity for open discussion and seminars, as well as international conferences, if knowledge is to spread beyond isolated fellowships of colleagues.

As we see it, empiricism and inductive thinking are indeed important for the growth of knowledge and certainly within our own branch, contract archaeology. This simple conclusion is very important, since the deductive work-process is usually put forth as the preferable one, or even the only right one (see for example Carver 2009). It has been undisputed since the late 1960s or early 1970s when the demand for a new work-process came along with the New Archaeology. The process comprised: question, test/excavation, answer, feedback, new question (Moberg 1969), or as the mantra went: think before you dig! This way of working signifies construction archaeology today, but needs to be reconsidered and modified. The deductive way suits research excavations where one usually knows what is going to be excavated and you know what you want to identify. In construction archaeology, on the other hand, one is supposed to see what can be found and what it may be. Surprises are common and then the deductive work-process has its flaws, still it is not altogether wrong. Of course we need to ask questions, see the potentials, for example within a landscape or a monument, and we need to be well prepared for the excavation at hand. But, we must also be prepared for the surprises and know how to deal with them or they will easily be missed or interpreted into something familiar. For example, a Mesolithic hut being interpreted as a huge pit, a tree wind-fall or a cultural layer pocket. As one of the editors to this volume commented, perhaps the mantra should be: think before you dig, but always be prepared to re-think.

Another conclusion relates to the old question about the relationship between theory and material. As we see it, there is none, i.e. not without an archaeologist as a link. Theoretical knowledge as well as other archaeological knowledge exists in the archaeologist's mind. Therefore, theory is always there. It makes the archaeologist see potentialities before the excavation and different possible interpretations during and after the excavation. It evokes different possible methodological strategies and focuses on different aspects of an excavation, but the basic approach will still be inductive, seek and see what we will find. If not, contract archaeology would be ignoring the very fundament it rests upon. An interaction between the inductive and deductive opposites, based on our experience, works best if there are constant discussions during the whole process. This way of working does require a less rigid plan for the excavation, though. It also demands broad theoretical competence of all of the archaeologists involved in the field as well as many years of experience of fieldwork and, of course, a solid knowledge of the archaeological material. They are all of equal importance when good and interesting archaeology is created.

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RESTORATION OF MEGALITHIC TOMBS IN DENMARK

Torben Dehn, Svend Illum Hansen and Jørgen Westphal

Abstract: This article presents a short account of the history and development of restoration of megalithic monuments in Denmark – with particular reference to the Megalith Campaign of 1987-96, for which Kristian Kristiansen took the initiative. This campaign was of great significance for subsequent restoration work and associated investigations which have resulted in much new information with respect to the structure, architecture and construction of megalithic monuments. A number of illustrative examples are then briefly outlined: megalithic tombs as multi-period structures, post traces from the construction process, sealing of dry-walling, dualism, closing stones and sealing and drainage systems.

Keywords: megalithic tomb, dolmen, passage grave, restoration, Funnel Beaker Culture, TRB Culture

Introduction

As head of the section of Ancient Monuments in the Forest and Nature Agency, Kristian Kristiansen took the initiative at the end of the 1980s for a campaign aimed at restoring some of Denmark's most dilapidated dolmens and passage graves.

The authors of this article have, over the course of two decades, been responsible for putting this into practice. A guiding principle throughout has been that the restoration work should be carried out in combination with archaeological investigations, as defined by the restoration requirements. This approach has led both to better methods of restoration and to the generation of new knowledge with respect to the structure and construction of megalithic tombs.

Megalithic tombs are visible testimonies to the rich and complex Funnel Beaker Culture/TRB Culture and the exceptional craft traditions and expertise they possessed – and also attest to the technical requirements needed to erect building works with a durability measured in millennia (Midgley 1992, 2008).

Today there are c. 31,000 recorded and scheduled ancient monuments in Denmark, of which c. 3,000 are megalithic tombs. All ancient monuments require regular care and maintenance, but whereas ancient monuments comprised of earthworks rarely require actual restoration, those incorporating structures of stone and brick are often in need of more extensive repair. This applies in particular to ruins dating from the Middle Ages and more recent times, and to the megalithic tombs of the Neolithic.

Opportunities for state authorities to carry out this restoration work have, through time, been defined variously in the legislation, most recently in the Danish Museum Act (<http://www.kulturstyrelsen.dk/english/cultural-heritage/sites-and-monuments/protected-sites-and-monuments/#.UUximxc2l8E>). Seen from an historical perspective, however, and having experienced it firsthand, it seems unfortunate that this work has been characterised by one-off grants and campaigns rather than the permanent efforts for which there is a basic and fundamental need. For example, in the 1930s such work was implemented through employment creation initiatives, then in the 1950s for the repair of damaged burial mounds following the German WW2 occupation. In the 1980s-90s there was a ten-year restoration campaign directed at ruins and megalithic tombs. The situation has not improved in

the new millennium, with the work to date being carried out for steadily decreasing short-term grants.

The earliest restorations

There are a few known instances of repair work in prehistory, but in many of the cases where this has been particularly finely executed it may well have been overlooked by archaeologists. For example, serious damage in the Birkehøj passage grave, in the form of an inwardly collapsed ortholith, was repaired already in the Neolithic by efforts to re-erect it from inside the chamber (Dehn et al. 2004:168-171).

During the course of the eighteenth century an interest developed in prehistoric tombs, some of which became included in romantic garden features, particularly those around castles and manor houses. Several were modified with the addition of spiral pathways or terracing. Some mounds associated with passage graves originally had terraced sides and, as a consequence, it can be difficult to ascertain whether a terrace dates from prehistory or from much more recent times. A passage grave in the woods of Slotshegnet at Jægerspris Castle was excavated in 1744 in connection with the park landscaping and the creation of footpaths, benches and arbours. The investigation was carried out by the then crown prince, together with topographer and historian E. Pontoppidan (1698-1764).

In the course of these efforts, the chamber was restored such that there was potential access for visitors and a memorial stone was added on the top. It is the earliest restoration of a passage grave in recent times of which we are aware. It also represents the first substantiated archaeological investigation of a passage grave. Incidentally, E. Pontoppidan concluded that those buried there were not giants (the Danish term for passage grave is *jættestue*, literally 'giant's hall') but quite ordinary people, as their bones were no larger than ours (Pontoppidan 1745). When the authors of this article revisited and restored the chamber in this passage grave in 2000, the mound was surveyed using a so-called magnetometer. This led to the discovery of a further and previously unknown grave chamber in the mound (Smekalova & Voss 2001:149-150). This has as yet not been subjected to further investigation. Subsequently, geophysical surveys have revealed the possible presence of unknown chambers in a couple of other mounds and we consider it likely that a proportion of Denmark's c.



Fig. 1. Restoration of Jordehøj in 1988. From right to left: Kristian Kristiansen, Christopher Tilley and Svend Illum Hansen. The person with the cap is an amateur archaeologist. Photo: Torben Dehn.

20,000 scheduled burial mounds may contain as yet undiscovered megalithic chambers.

During the second half of the eighteenth century, and up through the nineteenth century, many passage graves and dolmens were investigated more or less expertly. A number of megalithic graves (997) were protected by voluntary agreements with the owners scheduled during this time (Mindesmærker 1939:50), but many thousands more were plundered for their stones and either completely erased or left in ruins. Over the course of less than a century the number of visible ancient monuments in Denmark was reduced by more than two-thirds, to the c. 31,000 examples we have today. A general scheduling took place first with the passing of the Nature Conservation Act in 1937 (Ebbesen 1985; Nielsen 1987).

Restoration was carried out of a small number of megalithic graves towards the end of the nineteenth century, but from around 1900 onwards more systematic restoration initiatives were launched (Dehn et al. 2007:274-281). Until 1975 these restoration projects were undertaken by the National Museum. The restoration work has always been technically challenging and also requires the shrewd insights of a field archaeologist. Consequently, it was

carried out by people who, as master craftsmen in a highly specialised trade, leaned heavily on experience handed down over the years, for example Julius Raklev, Gustav Rosenberg, Knud Thorvildsen and Sven Thorsen (Thorvildsen 1985; Christensen 2010).

The megalith restorations of the last three decades

In 1975, responsibility for the restoration of ancient monuments was moved to the Danish National Agency for the Protection of Nature, Monuments and Sites, subsequently the Danish Forest and Nature Agency under the Ministry of the Environment (Dehn & Kristiansen 1993). In the early 1980s, attention became focussed on scheduled ancient monuments (Kristiansen 1985:142-162) and systematic management of the vegetation on these monuments was launched. During those initial years hundreds of monuments were freed from bushes and trees and rendered visible in the landscape (Thorsen 1985:186-191). It became increasingly clear that many hundreds of megalithic tombs were damaged and suffering continuing degradation. The pitiful state of these structures was not due solely to the ravages of time and the forces of nature, but had been reinforced by destruction which took place prior to the implementation of effective scheduling legislation. It was clear



Fig. 2. The authors of this article: Torben Dehn, Svend Illum Hansen (rear) and Jørgen Westphal (front) during restoration of the Mogenstrup passage grave in 2007. Photo: Karsten Kristiansen.

that there was a need for much more attention to the matter in the form of systematic action.

As a consequence, the idea of a national restoration project directed at Denmark's megalithic tombs began to take shape. Collaboration with the National Museum on major investigation and restoration works focussing on the passage graves of Klekkendehøj in 1987 and Jordehøj in 1988 paved the way (Dehn et al. 2000). From the very beginning, investigation and restoration carried out in tandem yielded important new information, especially with respect to the structure of passage graves, as restoration developed into a form of experimental archaeology (Dehn & Hansen 2006b:42). In parallel with this, all passage graves in Denmark were visited and their requirements for restoration were described and prioritised in a report (Hansen 1993b). Work on 'the Megalith Campaign' was carried out continuously from 1991 onwards, and was funded through fixed annual grants.

The first major project was the passage grave Kong Svends Høj on Lolland, where a large number of archaeology students participated over the years, and received practical insights into the work involved both in excavation and in restoration. Over the course of the next decade a permanent team was formed, which included the authors of this article. The Megalith Campaign ended officially in 1997 – not because its work was complete, but because its financial backing disappeared. Since then parts of the group have, under various administrative and economic

circumstances, continued to work on restoring Danish megalithic monuments and accumulating information with respect to their architecture and construction.

Megalith restoration today

Restoration work is now planned and executed by the Danish Agency for Culture's permanent staff, in collaboration with external consultants and contractors. The aim of these restoration works is to stabilise the present state of the monuments and, as far as possible, to ensure that the authentic parts do not suffer further decline. Structural additions can prove necessary in the interests of conservation. At the same time, the monuments must be comprehensible to the public and, as a consequence, the marking of hidden or vanished parts of the construction may be desirable as a step in their communication and presentation. In prioritisation of the basis for restoration, conservation and authenticity aspects weigh heaviest, but communication and presentation are also involved. Views on how best to achieve the balance have changed over time, but the present practice is now formulated in the Conservation Principles of The Agency of Culture. Several of the monuments are visited by a large number of people and require regular monitoring on both conservation and safety-related grounds.

As a consequence, restoration works are always combined with archaeological investigation and recording, whereby all of the

details and principles behind the construction are elucidated. When the principles for restoration follow the principles of construction, the result is truer and more durable.

The archaeological recording often leads to the discovery of new information which can be important for the understanding of the individual monuments. And the monument's more recent history, both locally and nationally, should similarly not be underestimated. However, damage can also be so serious and demanding of resources that back-filling or closure to the public may be necessary both for safety reasons and to ensure the conservation of any original remains.

A large number of passage graves have previously been excavated and emptied of the earthen fill which, for millennia, contributed to supporting their stone constructions. During the course of the twentieth century, excavated passage graves were stabilised with the aid of iron supports. In recent decades, many of these have become unstable due to the effects of rust and corrosion. As a consequence, a significant part of the restoration work has involved stabilisation of some of these chambers in other ways, either by replacing the iron supports with stainless steel or by the re-laying of the actual stone construction (Dehn et al. 2000:52; Hansen 1982).

Natural and human-inflicted damage on megalithic tombs

An undisturbed megalithic tomb does not normally require restoration, but as soon as the original construction has been disturbed, either in prehistory or during more recent plundering or excavation, there is a greater risk of decline. As a rule, nature's degradation of ancient monuments progresses slowly over centuries or millennia. Large trees are always a threat, and in the case of wind-throws the roots can heave up stones several tons in weight and destabilise the monuments, leading to a danger of collapse, especially for passage graves. But tree roots may also cause damage under normal circumstances. Over longer periods, the roots can penetrate and damage the construction of the stone chambers and may also damage the layers of earth of which the mound is constructed. The best state both for mounds over megalithic chambers and all other burial mounds or barrows is a dense covering of grass and herbs. Regular management of the vegetation on ancient monuments is therefore essential (Hansen 1988).

Natural threats also include animal activity. The most serious damage to ancient monuments is caused by badgers and foxes which, in the course of a short time, can burrow through a barrow or a megalithic grave chamber to such an extent as to render it in acute danger of collapse. Examples of such damage are seen every year in Denmark (Dehn et al. 2000:240).

In the authors' experience, the damage caused by agriculture and forestry can be even worse. Every year, numerous reports are submitted about such damage. Agriculture and forestry's intensive cultivation methods, using large heavy machines, pose a major threat to ancient monuments. Forestry and agricultural contractors are often engaged to carry out the work and this can lead to further damage, as they tend not to have the same detailed knowledge of the areas as the owners themselves.

New information

The last 25 years of restoration work has been closely linked with archaeological investigations of the individual megalithic

graves, especially passage graves. This has provided significant new information, in particular with reference to their construction and architecture.

The form and appearance of passage graves is in no way accidental or determined by the apparently coarse and ungainly glacial boulders of which they are built. The constructions incorporate a series of elements which are of no building-technological importance. A number of architectural details can therefore be ascribed ritual or symbolic significance. The earthen mounds which envelope the chambers contain a wealth of constructional details which are concealed within the monument and which are only known to those who participated in its construction. This gives food for thought with reference to the use and social significance of passage graves, which undoubtedly were associated with a cult of the dead. They constitute the focus of a series of rituals, both inside and outside the grave chambers, and both during construction and after the monuments had been completed. Sometimes they were used as charnel houses, where the bones of the dead were deposited, and at other times they were employed for the burial of entire corpses. Passage graves were also used in subsequent periods of prehistory, often for more than a millennium (Dehn & Hansen 2006b; Dehn 2009:23).

When the stone structures have fallen, or are in danger of collapse, stabilisation often requires intervention into the actual construction of the burial mound; an intervention which involves the Danish Agency for Culture's archaeologists. As far as possible, the position of the necessary excavation trenches is selected to coincide with previous archaeological investigation or plundering pits in the burial mound, i.e. where former activities have already disturbed the monument and have initiated a decline. This is done in order to minimise damage to the surviving original parts of the mound. It also results in the exposure of sections through the burial mound (Dehn et al. 2004).

In these sections, extending from the subsoil to the surface of the mound, it is possible to study and record the course of the mound's construction. Passage graves have often been covered by one or more subsequent extensions. Conversely, some elements of the original megalithic monument may have been removed or subjected to alteration. As a consequence, grave furniture from the Late Neolithic and Bronze Age is a frequent occurrence in passage graves. The passage graves were not just re-used as grave chambers but have often been subject to alteration or modification and were adapted according to the demands of rituals and religious perceptions of later periods. In several instances evidence has been observed of break-ins into the chambers, carried out later in prehistory. Following these, it is clear that people were not able to, or did not wish to, repair the damage inflicted in the process with the same level of craftsmanship as seen in the original construction of the monuments (Dehn et al. 2004).

In parallel with the restoration work, samples of soil and other materials are taken e.g. for the purpose of pollen analysis. In more than half of the cases presence of preserved pollen has been revealed. This renders it possible to build up a picture of the landscape at the time when the burial mound was constructed or to conclude which cereal species were cultivated in a given location (Andersen 1993a; 1993b; Westphal 2008). In many instances preserved traces have been found of the Neolithic farmers' ploughing activities on the field where the burial mound was subsequently constructed.

There is no evidence to suggest that any Danish passage grave

Birkehøj**Reconstruction**

- Top soil
- Sand
- Clay
- Gravel
- Flint
- Stone age surface
- Rock

0 0,5 1
 meter

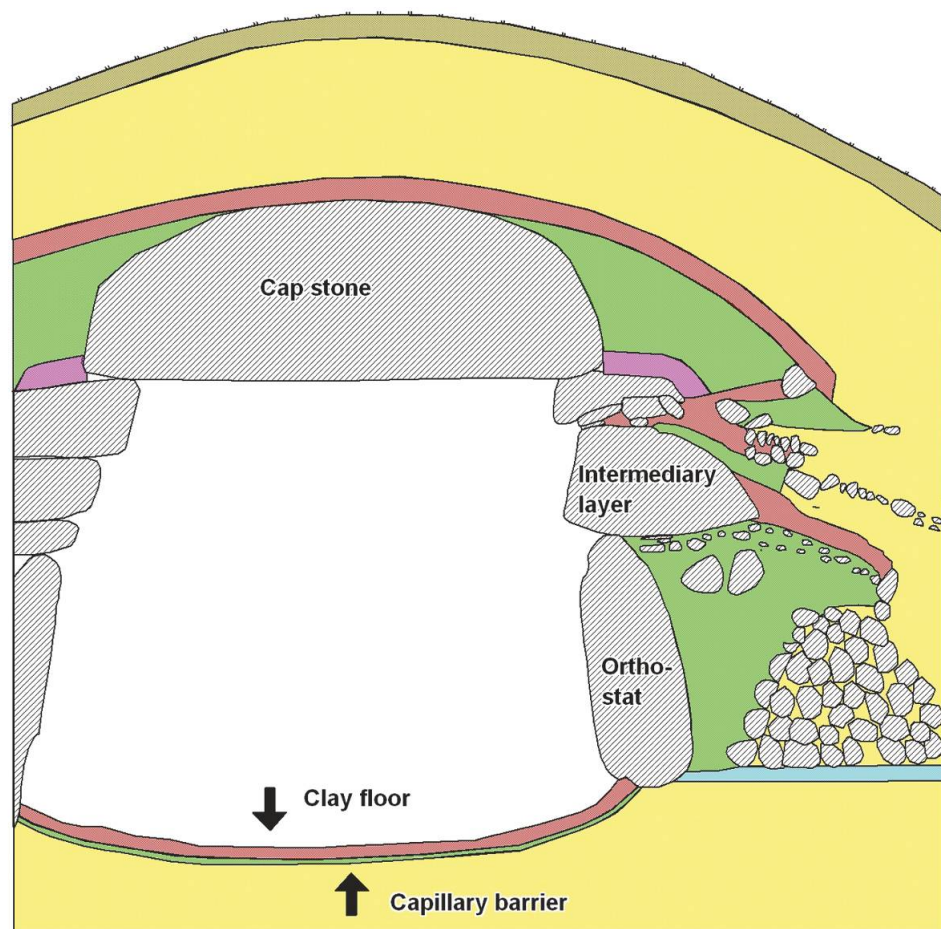


Fig. 3. Constructional principles for the chamber in the Birkehøj passage grave. The drawing is based on a section through the monument, but the areas behind and beneath the double wall, and those above and beside the capstone, were only partially investigated. Drawing: Jørgen Westphal.

chambers were, from the very outset, not completely enclosed within a burial mound. Whether this was also the case for dolmens is still the subject of discussion among Danish archaeologists (Andersen & Eriksen 1996; Andersen et al. in press; Dehn 2013). The authors of this article consider it extremely likely that the mounds associated with dolmens, in a very large number of cases, covered the chambers up to the level of the tops of the ortholiths. Whether the mound possibly extended up around the capstone, or perhaps even covered it, is less certain. The authors of this article do not agree on the extent to which this was the case and the frequency with which it occurred. It is open to debate whether the mound construction was an original feature or whether it originated from a later phase of modification. The article's authors do, however, believe that the dry-walling between the kerbstones and between the ortholiths of the chamber could not, in practice, have stood without being supported from the rear by packing material and mound fill. And dry-walling and mound fill are considered to constitute an integrated entity apparently added at the same time as, or shortly after, erection of the actual stone construction. There were originally around 25,000 megalithic graves in Denmark (Ebbesen 1985:40) and it seems likely that innumerable variations existed on the theme of 'covered and non-covered dolmen chambers'.

How were the great capstones manoeuvred into position? This is the most frequent question posed by visitors during fieldwork.

We don't know, but in some cases traces have been found which could originate from manhandling these great stones. These traces include evidence of large posts positioned directly behind the ortholiths of the chambers (Dehn et al. 2004:166-168; Dehn & Hansen 2007:24-26). These posts were probably used during the building works, but whether they constituted part of some kind of lifting device is impossible to determine with certainty. The actual transport of the capstones, weighing up to 25 tonnes, was, however, a manageable task. Experiments with sleds and various sources of pulling power, together with ethnographic examples from recent times, show that this was more a matter of willpower and organisation (Bakker 1992:33; Eriksen 1999:51).

A much greater challenge was encountered in the positioning of the very heavy capstones over the grave chambers. This was always done with a precision measured in centimetres. There are a few examples of where things almost went badly wrong for the megalith builders. The large capstone perhaps slipped a little from the position in which it was intended to lie, or it crushed the underlying stone layer (Dehn 2009:23-25).

The orientation of passage graves and the positioning of the ortholiths appear in no way to be random. In Kong Svends Høj, a line had been marked at the base of the burial mound which denoted the orientation of the passage relative to the chamber (Dehn et al. 1995:28). Similarly, a study of almost 100 plans

reveals that at least one side of the passage was aligned according to a line running out from a space between the ortholiths in the longitudinal side of the chamber opposite the mouth of the passage (Dehn & Hansen 2006b:52-54). The chambers of passage graves were originally completely sealed. The gaps between the great ortholiths, often of very irregular shape, were closed with a dense packing of flat stone flags, generally sandstone, laid course after course like bricks in a modern wall. This is referred to as dry-walling, i.e. construction without the use of mortar or other binding medium between the flagstones. This term is, however, misleading as it is now apparent that either clay or a chalk mass was employed as a kind of mortar. Chalk mass was normally used in the parts of the country where chalk occurs naturally in the subsoil, but there are a few examples of its use in areas without natural chalk. In the Jordehøj passage grave on the island of Møn extensive use was made of chalk, not only between the dry-walling flagstones but also as a sealant over the capstones. Over the capstones, and incorporated within the earthen mound, there was a roof-like construction comprised of stone flags secured in a chalk mass, together with large quantities of crushed flint (Dehn et al. 2000:92-100). More or less well-preserved traces of similar constructions are seen in the majority of passage graves.

The rituals that were associated with the passage graves are reflected in both functional and non-functional constructional features (Dehn & Hansen 2000; 2006b:56-61; Dehn 2009:21-23). The more of these details that can be identified, the greater the number of pieces obtained for the jigsaw puzzle comprised by the religion of the Funnel Beaker Culture. No attempt will be made here to present an interpretation of the latter, but merely to exemplify how rich a source of information on the mindset of the Funnel Beaker people studies of the structure, construction and architecture of megalithic tombs can be.

On the chamber floors and in front of passage graves there are large quantities of crushed and white-burnt flint. In the chambers it appears that the flint has been repeatedly deposited in small heaps so that eventually they covered the floor, forming a single continuous layer. In some parts of Denmark, burnt flint is observed behind the dry-walling of the chambers, forming a kind of ritual seal. But it is most common in this situation to see unburnt crushed flint. In some instances the sides of the mounds have been more or less covered with white-burnt flint which, time after time, has cascaded down in front of the kerbstones. In some cases this extends all the way around the mound, in others it is only seen in the entrance section. It is possible that the white colour or the material's physical properties were significant.

A common feature of passage graves is the incorporation into their construction either of polishing stones or quern stones. In most cases the latter have been cleaved in two. In the passage grave Birkehøj, polishing stones and quern stones had been inserted in several places in the 11 m long chamber, either at the junctions between the capstones at the support points or in the actual dry-walling construction (Dehn et al. 2004).

In several of the passage graves a subtle detail can be noted: one of the great capstones extends a little lower into the chamber than the others, making it necessary to stoop slightly when entering this part of the room. This is as a rule at the right side of the chamber, seen from the entrance. The numerous instances of this feature suggest that it is an intentional element of the architecture (Dehn et al. 1992:59-60). It has also become apparent that the left side of most passage graves either consists of larger or more regularly-shaped stones or is generally better or more harmoniously

constructed. In the case of double-chambered passage graves the same set of rules applies to the left-hand grave chamber (Dehn & Hansen 2000; 2006b:58-59). A downwardly protruding capstone is found in most of the passages such that this renders the entrance lower (Hansen 1993a:51). About half of all the megalithic graves in Denmark, both dolmens and passage graves, have so-called twinned stones. Two halves of the same cleaved stone of granite or gneiss are located in the chamber or the passage, either opposite each other or side by side, as a set of twins. In Kong Svends Høj on Lolland six sets of twinned stones occur in the same chamber (Dehn et al. 1992:55-59).

Around 10% of Denmark's passage graves are double-chambered. In most cases these constitute two completely separate chambers, located within the same mound. But in a number of instances the two chambers, each with its own passage, were built in the same operation so their walls share a common stone. This dualism occurs between two stones and between two adjoining grave chambers within the same mound. It is also seen with respect to two individual monuments located just 70 m apart which, despite great differences between them, have an identical ground plan (Dehn & Hansen 2006b:59-60).

In around half of all passage graves in Denmark there is a so-called closing stone at one end of the chamber. This stone is not load bearing, in contrast to the other vertical stones in the chamber. It is also much smaller and was possibly put in place from the reverse, i.e. outside, of the chamber at the end of the building process. It seems likely that this stone closed an extra opening to the chamber sited here during the actual building process and finally closed manually on its conclusion (Hansen 1993a:22). The existence of a kind of access path during this stage in the construction was, for example, observed during investigations into the Birkehøj passage grave (Dehn et al. 2004:165-167). It would perhaps have been practical to have an extra entrance through which materials could have been taken in and out of the chamber. Similarly, it may also have played a ritual role.

The existence of drainage systems has been documented in several passage graves. These take the form of ditches filled with crushed flint, which have been dug into the subsoil around the chamber and passage. In the Birkehøj passage grave there was both a capillary barrier layer beneath the floor and a complex sealing and drainage system in the top of the mound. Many observations suggest that the passage grave builders apparently had detailed knowledge of the technical properties of the various building materials and how these could work together in the structure as a whole. The builders probably used their knowledge and experience to design building works which could provide a physical tangible frame for a belief in eternal life after death. A passage grave with intact sealing and drainage systems, covered with an undisturbed earthen mound and a well-maintained grass sward, is estimated to be able to survive for tens of thousands of years. It is difficult to explain this extremely long theoretical lifetime in terms of mere random chance. Furthermore, the large stones involved in the construction actually become degraded more rapidly if they are not covered and effectively screened from the influence of weather and climate. Phenomena such as cold bridges, salt crystallisation and thermal exfoliation are very destructive to the apparently otherwise so robust stones. This estimate is based on our observation of some of the most disturbed passage graves in Denmark where the constructions hardly show any sign of degradation even after 5,000 years. Over the short time horizon of an individual lifetime this can be difficult to appreciate. But if one considers how poorly preserved 1,000-year-old runestones or 3,000-year-

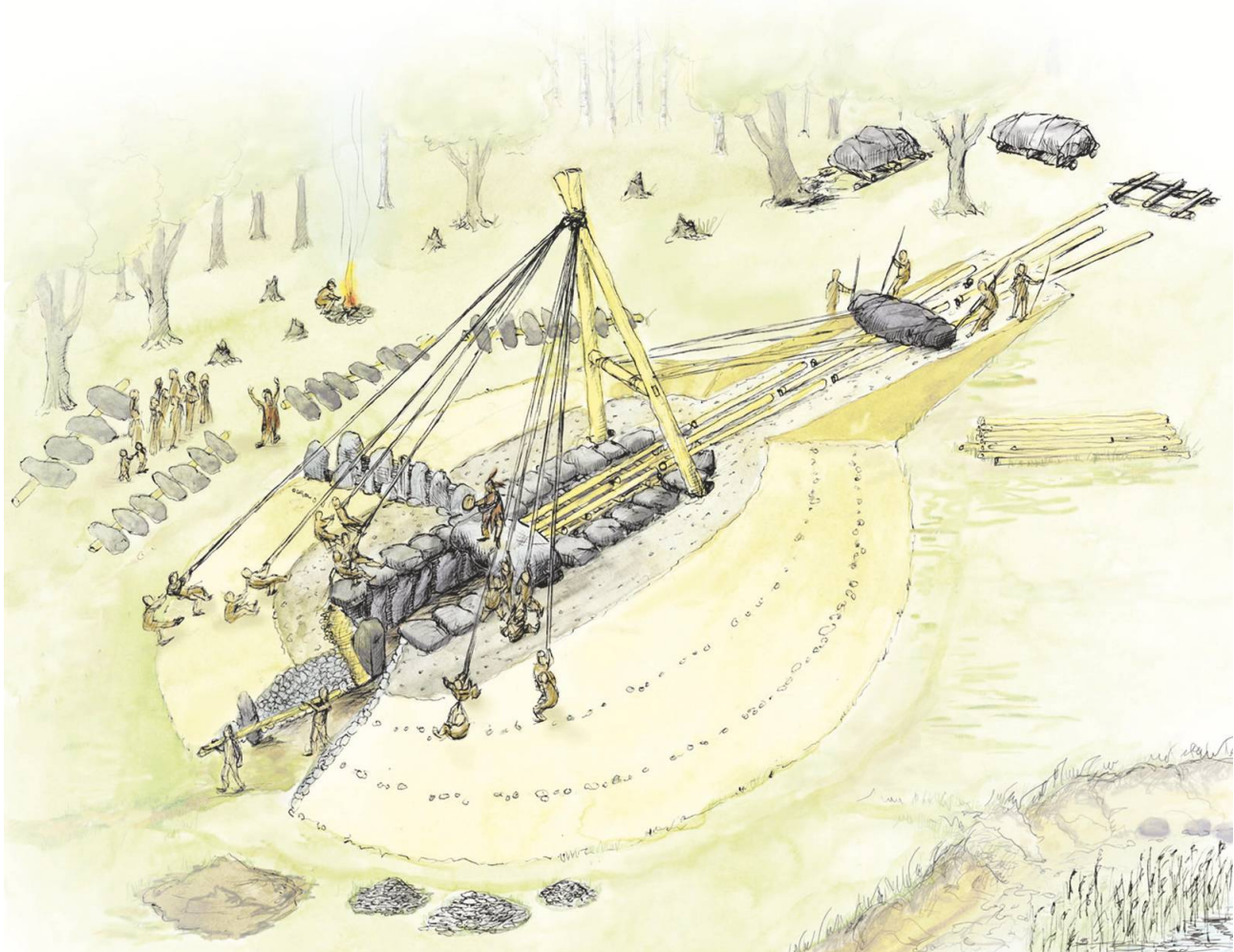


Fig. 4. A suggestion as to how Birkehøj's capstone was manoeuvred into place. Drawing: Thomas Bredsdorf.

old rock carvings can be in Southern Scandinavia, it is easier to understand the damage that 5,000-year-old passage graves can suffer if deprived of their protective covering mound and exposed to the influences of wind and weather.

In about a dozen instances birch bark has been found between the dry-walling of chambers (Dehn & Hansen 2006b). A piece of birch bark has been folded once then, with the fold facing in towards the chamber, it was placed between the flagstones. It is clear that the birch bark was added as a step in the original construction of the original dry-walling and does not originate from later repairs. The function of the bark is not fully understood, but it would have been an effective sealant between the dry-walling flagstones, performing an equivalent function to that of the clay or chalk mass seen in other passage graves. The sealant was necessary to ensure that the mound fill would not erode into the chamber. The bark would also have absorbed the enormous pressure which the capstones applied to and through the dry-walling – both during their actual positioning on the monument and also later – which could cause the flagstones to crack. It should also be remembered that a completely different effect – colour-wise – was created by the stripes of the white bark in conjunction with the orange and mauve of the freshly-broken edges of the dry-walling flagstones, than what we see today. The fact that the more than 5,000-year-

old birch bark is preserved is, in itself, evidence of the very favourable condition maintained within a completely sealed and dry passage grave. The bark apparently dried out exceptionally rapidly and did not subsequently become rewetted to the extent that it became affected by the bacteria and fungi which normally rapidly degrade dead plant material. The crushed flint behind the dry-walling and an earth-free chamber are both important factors in the preservation. The bark would certainly have been fresh when it was folded and placed in position and, as such, it offers a completely unique opportunity, also in international terms, to date the actual construction of Danish passage graves.

In broad terms, for generations, restoration efforts have been irregular and have fluctuated in extent. As a consequence, this element of cultural heritage has been exposed to an unnecessarily great decline. It is always a more expensive and less satisfactory solution to repair than to prevent.

Translation from Danish: David Earle Robinson

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THE ROUTE TO A HISTORY OF THE CULTURAL LANDSCAPE: A DANISH RECORD OF PREHISTORIC AND HISTORIC ROADS, TRACKS AND RELATED STRUCTURES

Jette Bang

Abstract: Traces left by thousands of years of traffic through the Danish landscape provide both inspiration and ample opportunity for archaeological and geographical studies. Compared with many other ancient structures, considerable experience is required to identify and interpret traces of roads in the form of abandoned tracks. As a consequence, their recording and preservation present many challenges.

Nonetheless, in the mid-1990s, under the leadership of Kristian Kristiansen, the former Division of Cultural History of the National Forest and Nature Agency, under the Danish Ministry of Environment, took on the task of creating a national database of remains of prehistoric and historic tracks and roads. The database, and other tasks formerly the responsibility of the Division of Cultural History, have now been transferred to the Danish Agency for Culture under the Danish Ministry of Culture.

Nationwide gathering of data and field studies resulted in a Danish record of ancient road-related structures containing more than 2,300 sites, ranging in date from the Stone Age to the Middle Ages and beyond. This article describes the main impressions gained from the distribution and character of the road structures. It also presents case studies involving the interpretation of three selected sites with remains of early tracks and their potential geographic links and context.

Keywords: Danish tracks and road heritage, early road structures, prehistoric travel routes, historic roads, hollow ways, sunken roads, wheel tracks, cultural landscape

Introduction

They are still there

A large part of the earliest Danish road network lies buried beneath the roads we use today. But away from these modern roads, in areas that have not been cultivated or planted with trees in modern times, many of the old tracks still survive. This network of individual tracks and broad traffic corridors results from the traffic of millennia, where the development of actual roads must be seen in connection with the emergence of wheeled vehicles – carts and carriages. The oldest Danish records of cart wheels and roads date from the middle Neolithic, at the beginning of the third millennium BC (Rostholm 1978:185-222; Nielsen & Faber 1986:124; Jørgensen 1988:101; Olesen & Skov 1989: 9; Fabricius & Becker 1996:246, 257).

Most known prehistoric and historic traffic routes in Denmark are now included in the Danish Agency for Culture's archives (Fig. 1). Until 1995 there was no comprehensive overview of these remains, and only an insignificant number had been recorded or were protected as scheduled ancient monuments.

A threatened heritage treasure

As ancient monuments, roads are composed of numerous layers and sites in both time and space, but they also represent structures that have been used throughout several millennia. As a consequence, the geography of the earliest roads constitutes part of the road network we know today. However, it also provides an insight into former and very different structures. These hold great value by virtue of the many stories and tales that surround

them and the landscape or culture-historical context of which they form part. If the traces left by traffic and communication are not preserved, together with other ancient monuments such as settlements and cemeteries, defensive earthworks or animal pens and sacred springs, our opportunity to comprehend the cultural landscape in its entirety will be lost with them.

But the surviving traces of these ancient monuments are disappearing, due to urban development, expansion and amalgamation of farms, extraction of mineral aggregates and forestry activities. Over time, movements of drift sand and flooding have similarly obliterated many traces of tracks and roads.

New urban areas are continually being planned and ancient road structures can represent an asset in this process rather than simply being removed. The most well-preserved traces often lie in areas of great natural beauty where they offer significant leisure potential (Bang 1997:192-194). In the laying out of, among other things, new recreational or urban areas, culture-historical values must be taken into account. However, in order to involve traces of ancient roads as an asset in the planning process, it is necessary to know where they are.

In Denmark only about 40 proper road structures are protected as scheduled ancient monuments and prior to the national recording exercise about 100 localities were accessible via public records (the national database has recently been updated [the Danish Agency for Culture 2012]). The remainder appeared solely in the archaeological and historical literature or were known to only very few people.

The construction of a database

A new statute

The Division of Cultural History, at the time part of the National Forest and Nature Agency under the Danish Ministry of Environment,¹ was very aware that traces of roads and road-related structures enjoyed very limited legal protection and it was therefore decided to establish a national record (Bang 1997; Kristiansen 2002).

Kristian Kristiansen was head of the Division of Cultural History from 1987-1994. One of the Division's duties was to record and protect the visible or constructed heritage (Kristiansen 1985), also with a view to preserving intact entities and environments within modern contexts. In addition to directing the Division's work towards culture-historical links and contexts in the landscape (Kristiansen 1988), Kristiansen supported the initiatives of his staff in recording and protecting cultural heritage, including the preparation of new legislation.

The new Nature Protection Act of 1992 therefore made it possible to protect, through scheduling, all forms of road traces (today § 29e of the Museum Act 2006). Previously, it was only possible to protect actual built structures, such as bridges, causeways and paved roads, as scheduled ancient monuments (Kristiansen 1985:143; Bang 1997:190).

The visual interplay between ancient monuments and their surroundings is important in relation to the preservation of culture-historical or landscape entities. Ancient roads figure prominently as important connecting elements, linking together other ancient monuments and the landscape.

A database

Between 1994 and 1996, the author, together with Karsten Kristiansen, recorded well over 2,300 sites showing the visible remains of roads in a map-based database (Kristiansen 2002) (Fig. 1). The overall aim was to accumulate a basic record which could then be used as a foundation for actual designation and legislative protection, i.e. scheduling.

The database is the first complete inventory of prehistoric and historic road traces in Denmark. It was established on the basis of questionnaires circulated to culture-historical museums, the county authorities of that time and State Forestry Districts. The information received was supplemented with records gathered by a few private individuals and literature studies, the greatest part the extensive surveys by the historian Mads Lidegaard (1975, 1976, 1977, 1979, 1980, 1983, 1988).

State of the art

Many people have both written about and excavated the remains of prehistoric roads in Denmark, but few of these studies build on an exhaustive examination of extended sequences of road traces in the landscape.

The first Danish archaeologist known to examine systematically the course of prehistoric roads in the landscape was Sophus

Müller.² He demonstrated a connection between roads and rows of barrows and published evidence and examples from western and southern Jutland (Müller 1899, 1904). In the 1920s and 1930s, and inspired by the work of Müller, engineer and later professor at the Technological University in Copenhagen, J.T. Lundbye, reconstructed several networks of historic roads. He did this on the basis of an interpretation of the limitations imposed by the terrain, locations of fortifications and place names. These hypotheses were later tested in the field (Lundbye 1925). Just less than a decade later, historian Vilhelm la Cour continued where Müller had left off. Using the evidence provided by place names, among other accomplishments, he drew roads linking Zealand's earliest settlements (la Cour 1923, 1927).

In 1927, historian Hugo Matthiessen submitted his dissertation on *Hærvejen* (the Military or Ox Road) running north - south through central Jutland (Fig. 1). He was of the opinion that the road was only 1,000 years old and had its origins in the Viking Age. Matthiessen later elaborated his studies in publications based on early written sources and field studies (Matthiessen 1971 [1930], 1933). The southern section of *Hærvejen* has subsequently been studied in more detail (Svensson 1984; Becker-Christensen 1986).

In the 1940s and 1950s, archaeologist Therkel Mathiassen carried out further field investigations. Now graves and roads became linked to settlements along *Oldtidsvejen* (the Prehistoric Road), a linked stretch of road and line of barrows in western Jutland (Figs. 1, 2). A similar study was carried out in north-western Zealand (Mathiassen 1948, 1949, 1959).

Thirty years on, historian and high school teacher Mads Lidegaard published seven guide books (Lidegaard 1975 - 1992) based on extensive surveys and studies of aerial photographs of *Oldtidsvejen*, *Hærvejen* and *Ravvejen* (the Amber Road), a western equivalent of *Hærvejen* running along the west coast of Jutland, and all the roads branching from them (Fig. 1). An equally detailed, if not quite so regionally comprehensive, record of previously unknown prehistoric roads was produced by cartographer Børge Johannes Steiner in 1984. It was based on field-walking and reconnaissance through the woods of north-eastern Zealand.

Around 1990, the woods of eastern Jutland were studied in a similar way by archaeologist Jesper Laursen. The aim of this latter study was, however, to record all ancient monuments, not just traces of roads (Laursen 1994). At the end of the 1980s, in connection with the production of a scheduling plan for the former Ringkøbing County, Holstebro Museum surveyed and examined records of ancient monuments along *Oldtidsvejen* (Figs. 1-2) from central Jutland to the North Sea (Olesen & Skov 1989). The connection between roads and lines of barrows has most recently been examined in western Jutland (Egeberg 2004).

Barrow lines as long-term structures were examined in a case study carried out in south-west Jutland (Johansen et al. 2004). However, this study dealt primarily with barrow lines as a spatial reflection of Early Bronze Age networks of social interaction and 'down-the-line' exchange, as demonstrated by the correlation between barrow-line network centrality and artefact patterning.

Several smaller or more local road studies have been carried out in, for example, parishes (Damgaard 1985), jurisdictions

¹ In November 2001 this area of responsibility was moved to the Ministry of Culture. The division is today the Centre of Culture Heritage and Architecture and is part of the Danish Agency for Culture.

² Sophus Müller was the head of the Department of Prehistory at the National Museum of Denmark 1892 - 1921.

(Pedersen 1986), around urban areas (Hansen 1984), in river valleys (Mikkelsen 1974) and along some stretches of road (Høgsbro 1980).

The distribution of, and routes followed by, tracks and ancient roads in Denmark have accordingly been studied and addressed by many scholars during the course of the twentieth century. A characteristic feature of this work is, however, that none of these individual studies has provided a comprehensive picture of the distribution of the traces or given an overall interpretation of their culture-historical or landscape context in Denmark as a whole.

From dots on a map to linear structures

Dots on a map

The database established in 1994 contains primarily records of traces of roads that are no longer in use. These ancient monuments comprise paths, tracks, wheel tracks, hollow ways, extended systems of roads and tracks, causeways, fords, sequences of stepping stones, bridges and remains of bridges.

These occurrences shown on the map (Fig. 1) are an expression of traffic over several hundred to several thousand years, where the same stretch of traffic route may have had a different significance and function at different times and may also have lain unused for long periods.

With several exceptions, the recorded tracks are undated. They are interpreted as being ancient on the basis of an overall assessment of their features and character: they arose through erosion in the terrain, their breadth, their location and context relative to dated road structures in, for example, fords (Bang 1997:191–194). Excavations have yielded datable finds, constructions or organic material, or the traces have been overlapped by datable traces or other ancient monuments (Fabricius & Becker 1996; Hansen & Nielsen 1979; Jørgensen 1977, 1987; Kunwald 1996). The orientation of the roads straight towards early villages, castle mounds or barrows suggests that, for example, barrows or towers may have been used as sighting points, but not necessarily what was built first or that there was a connection in age (Bang 1997:191–194).

Based on the record and data extracted from our (unpublished) field surveys there is an overall impression that traffic corridors, such as structures used over long periods of time, are of as great an interest as a precise date for an individual road tracé.

If we return to the map (Fig. 1) it is evident that considerably more than half of the 2,300-plus recorded sites are located in Jutland, where the main long-distance route *Hærvejen* following the watershed running along the central ridge dominates the record. This is due in part to the fact that central Jutland is relatively extensively cultivated and that this stretch of road received major attention from researchers at an early stage; as a consequence, they concentrated their reconnaissance efforts here. The latter is also the reason for the more than 350 records seen located in the forests of north-eastern Zealand (Steiner 1984). Bornholm is densely covered with roughly 100 records, and here, too, the many uncultivated areas have protected the remains and local archaeologists have been active recorders.

Conditions for preservation and recording are less favourable in more intensively cultivated regions such as eastern and southern Jutland and the Danish islands: most of Zealand, Funen (just 100

localities), and Lolland and Falster (which combined have almost a dozen localities).

Linear structures

The recorded road traces comprise local, regional and long-distance routes. The various types of road are mentioned in the Jutlandic Law from AD 1241. This distinguishes between roads within the parish, district roads connecting several villages and public highways which went from market town to market town, linking the provinces (Pedersen 1986:16). Mention is only made below of the longer and relatively major routes. These are also very ancient, judging from the extended and often densely-packed rows of barrows which are assumed to have been sited alongside them, both for practical reasons and in order that they should be seen (Olesen and Skov 1989:4–8; Egebjerg 2004:44; Eriksen et al. 2009:104–105). *Oldtidsvejen* (Figs. 1, 2) is the most prominent example of a concurrent stretch of barrows and road traces in Denmark.

The best known prehistoric road or rather ‘traffic corridor’ is *Hærvejen* which is seen as a direct connection through Jutland, linking Denmark/Norway with the Continent (Fig. 1). Its Danish name, i.e. *hærvej*, was used in the Middle Ages to refer to a main traffic thoroughfare intended to facilitate the army’s movements around the country. The route’s military function was only one of many; it was also used as a drove road for cattle transport, for trade and for long-distance travel and it comprises many diverse local and regional stretches. Over time, many other names were applied to it, according to use or location: Ox Road, Pilgrim Road, Noble Road, Old Viborg Road to name but a few (Matthiessen 1971: 7–20). It followed the watershed in order to avoid crossing the many rivers which cut transversely across Jutland. Until the twentieth century, water levels were significantly higher than today and the river valleys were generally difficult to cross (Pedersen 1986: 96).

Another long-distance route, which must be presumed to be as old as *Hærvejen*, comprises a system of road traces running along the west coast of Jutland, linking Germany and northern Jutland. In addition to the name the Western Main Road, it has, by and large, been known by the same names as *Hærvejen* and is similarly flanked by rows of barrows. In contrast to *Hærvejen*, which runs along the watershed, the western road has to cross many watercourses. Lidegaard, who recorded the stretches of road in the field, named it *Ravvejen* (Fig. 1) in order for it not to be confused with the old central Jutish ‘*Hærvejen*’ (Strandgaard 1883; Pedersen 1986:101–115; Lidegaard 1988; Egeberg 2004).

In the field

In order to gain an impression of the character and quality of the recorded road traces, in 1995 two areas were chosen for survey (Bang 1997). The intention was to examine evidence that was as varied as possible with regard to degree of preservation and location in various landscape types. Consequently, two sections of the *Hærvejen* corridor were chosen: one in the north, a c. 20 km long track in undulating wooded natural terrain to the south of *Viborg*, and one further south, an almost 40 km long sequence running across the large cultivated plains to the west of *Kolding* (Fig. 1).

In all areas of unspoilt natural landscape, where roads are shown on old maps from the late eighteenth and the nineteenth century,

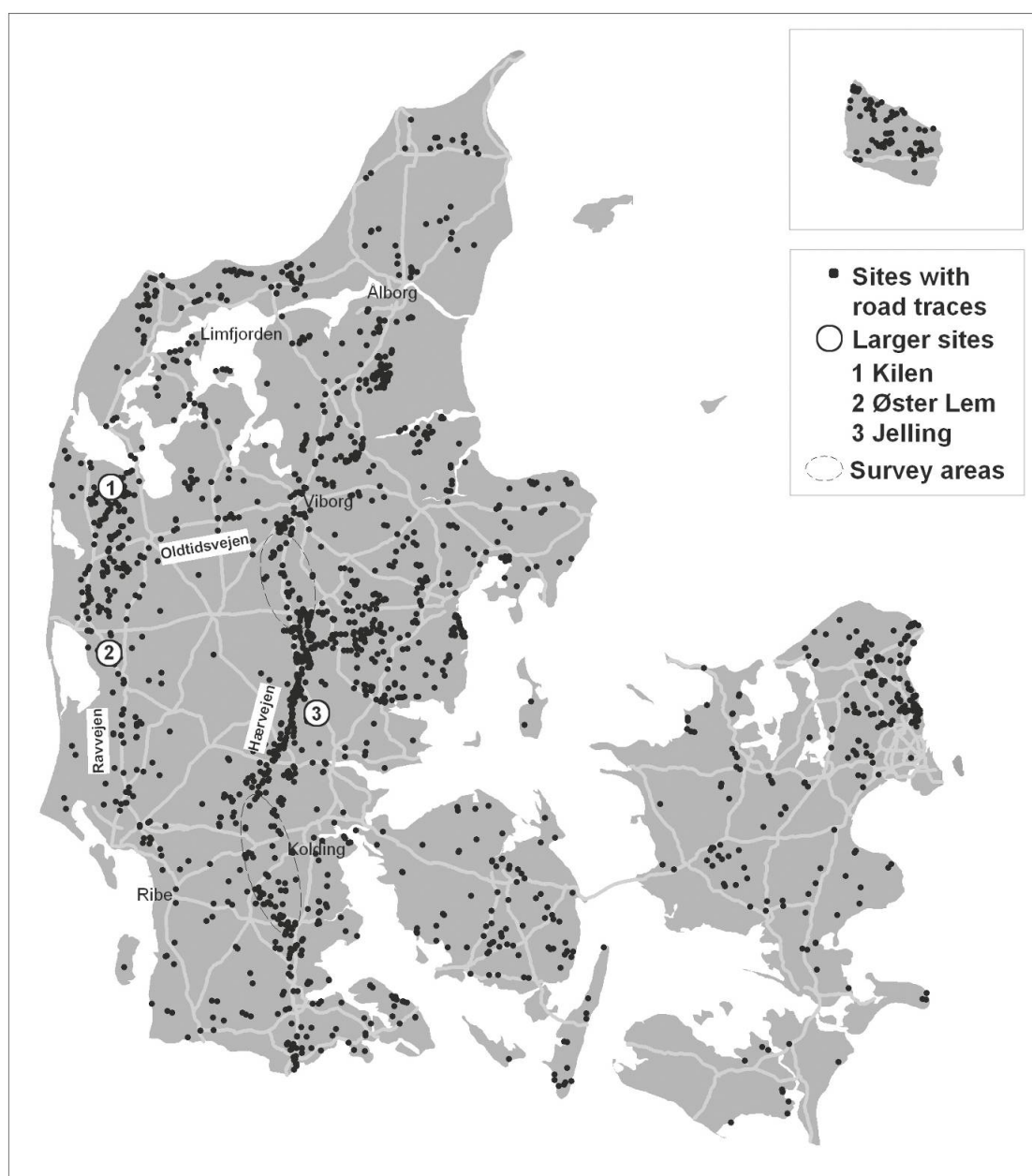


Fig. 1 The recorded sites are the remains of a more complex system of local communication, but also reflect longer robust and resilient overland sections of road. Hærvejen (the Military or Ox Road) meanders over a c. 20 km wide tract, following up to four or five different sequences of road traces along the central Jutland ridge, from Germany, via Viborg, towards the Limfjord region. It represents a wide complex communication corridor, with numerous roads running in parallel. These cross each other in places, form junctions at fords and byroads, before again dividing up or merging to form even fewer tracks. The most distinctive branches extend out towards the fjords of the east coast. Other less clear sections depart for the Limfjord to the north-west, Jelling and the fjords of the southern part of the east coast, as well as the Ribe area on the west coast. Ravvejen (the Amber Road) follows Jutland's west coast. It crosses the Limfjord, partly along the isthmus running between sea and fjord and partly over the sound to the north of Kilen (cf. 6.1 Kilen). It too has many parallel sections, merging, dividing and crossing again, and the greatest concentration of visible tracks south of the Limfjord. Illustration: Claus Dam, the Danish Agency for Culture.

the tracks are still visible.³ Many tracks, such as the so-called barrow roads, showing evidence of great antiquity are virtually absent from the maps. Normally, only roads that were in use at the time the map was drawn up were recorded.

With regard to choice of route, the impression given is that the

³ The Royal Danish Academy of Sciences and Letters' map (Videnskabernes Selskabs kort (1762-1820) and the ordnance survey map (Generalstabskortet) drawn in the 1870s.

shortest distance possible was chosen between point of departure and destination. In prehistory and early historic times, the greatest obstacles were waterlogged terrain and steep inclines (Kunwald 1964:7-10). Approximately half of the tracks in the two areas form a straight line running between two medieval churches. This indicates that these villages must be of significant age, if they represented the intended destination, or that people moved in this direct way well up into the Middle Ages. Evidence relating to

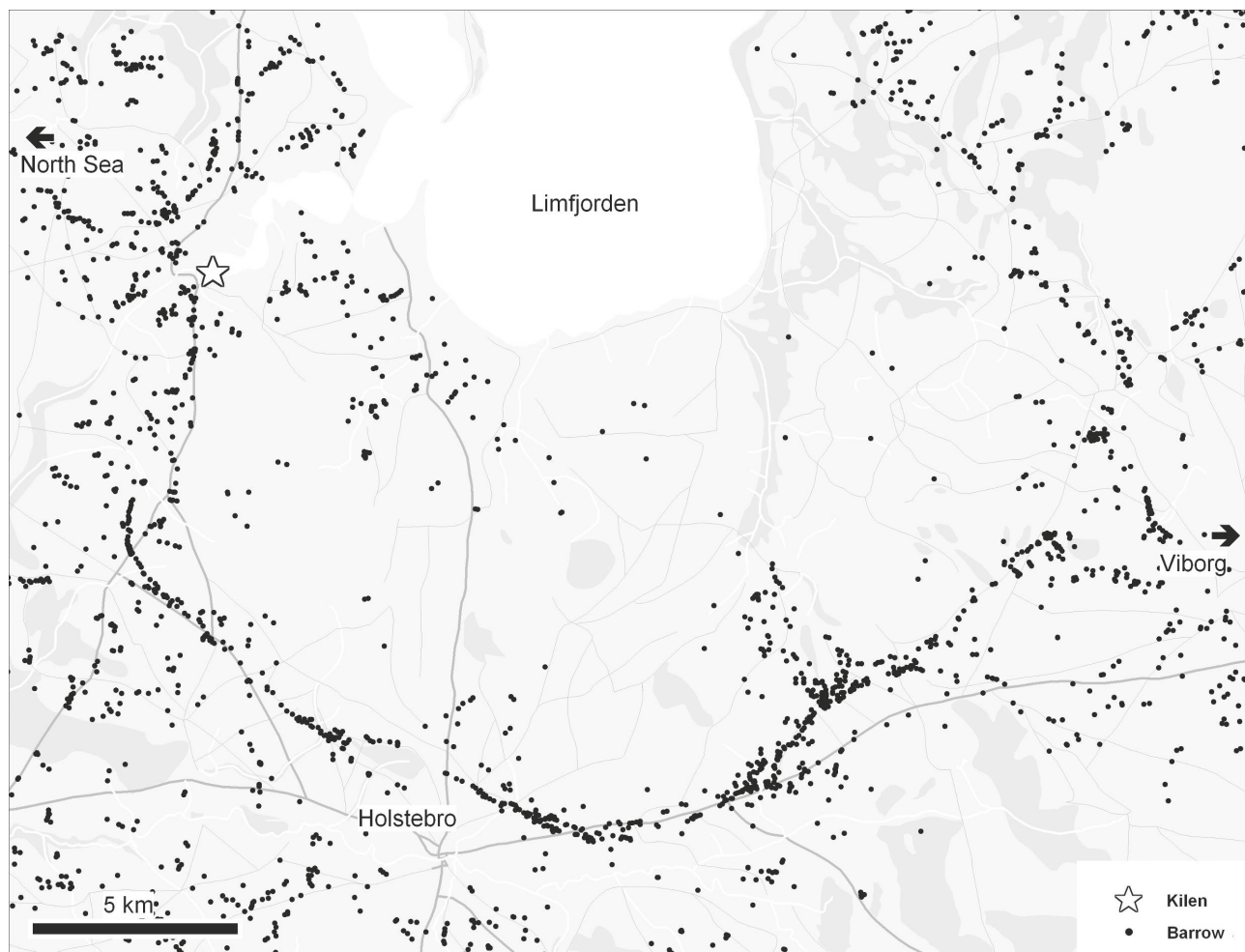


Fig. 2 Oldtidsvejen (the Prehistoric Road) is not so clearly apparent in the record of road traces (cf. Fig.1), because its route is not so much sketched by preserved tracks as by the more than 2,000 barrows from the Neolithic and the Bronze Age, which flank it. Furthermore, over 500 prehistoric settlements have been recorded in its proximity (Mathiassen 1948; Pedersen 1986:141-147, 153-156; Olesen and Skov 1989; Eriksen et. al. 2009:104-106). Like Hærvejen and the northern part of Ravvejen, Oldtidsvejen follows the watershed formed where the ice front halted during the last Ice Age in order to avoid waterlogged terrain and river crossings. Remains of it can be seen to the west of Viborg, where it probably had a link to Hærvejen, via Holstebro to the North Sea. Illustration: Claus Dam, the Danish Agency for Culture.

Hærvejen is more consistent with its character as a transit road; only slightly more 30% of the tracks run between 'church' villages.

As expected, the degree of preservation and the diversity of the traces are both greatest in the wooded and heath-covered areas to the north. A total of 40 localities were recorded; most in conifer plantations and deciduous and mixed forest, a smaller number on heath, commons and pastures. The fact that so many tracks are preserved in conifer plantations is probably due to the latter being older stands, planted around the middle of the twentieth century, before the practice of sub-soiling became commonly used in forestry. In the southern area, under much greater agricultural influence, only 14 sites were recorded.

In general, the presumed earliest road routes are better preserved than the latest. *Hærvejen*'s so-called 'barrow roads' often have a marginal location relative to settled areas, whereas stretches thought to have been used in historical times have frequently been repaired and possibly covered with tarmac such that they now coincide with entirely modern roads or have been totally obliterated by other urban developments.

The variation in the surviving record is surprisingly great: Classical hollow ways are preserved as stretches up to 300 m in length, between 0.5-4.0 m deep and – if not disturbed by use in recent times – barely 1 m to 1.5 m wide at their base. They typically appear in hillsides but are also found in level terrain where they tend not to be quite so deep. Fan-shaped systems on hillsides measure up to 150 m in width, and were formed where new tracks were cut up next to the old worn and eroded ones. They may cross each other, but more commonly two tracks merge or one track splits into two. Steep hollow ways may have been reinforced with a layer of stones at their base. This layer has often been eroded through and can be seen as one or more 'strings of beads' along the roadside. On rare occasions, a narrow bridleway or footpath appears alongside a hollow way.

In level terrain the preserved roads in the studied areas take the form of 15-200 wide and 40-400 m long tracts of 5-25 cm deep, parallel wheel tracks. In some cases the parallel tracks lie so close together that the surface of the terrain resembles a washboard and the features may even be mistaken for planting furrows. But the wheel tracks are neither as evenly distributed nor as arrow straight

as this agricultural phenomenon. The track width (gauge) of the hollow ways and the wheel tracks has been found to vary between just over 70 cm and 130 cm.

In heathland with a firmer base, where the wheels have not cut such deep tracks, the roads are revealed by differences in the vegetation: grass in the tracks, due to manure from the draught animals, and a band of heather along the edge, before the next track.

Where physical remains of the roads are, as such, not preserved, they can often be followed as depressions in the field or their route may be preserved in the form of field boundaries or dikes. As mentioned above, the roads are often flanked by barrows, and in places where the tracks have, over shorter stretches, been obliterated, their course can nevertheless be recognised because the burial mounds survive. Around a third of the stretches of road in the two above-mentioned parts of *Hærvejen* are flanked by barrows. The latter may be relatively closely-spaced and form long rows alongside the road without major gaps. In the few cases where a barrow is located in low-lying terrain by a watercourse, this occurs most commonly in association with a ford.

Around half of the road traces in the two areas are so well preserved that they are worthy of protection as scheduled ancient monuments. At present, only three of 25 preservation-worthy (out of 40) localities in the northern area and one of the seven preservation-worthy (out of 14) localities in the southern area are protected as scheduled ancient monuments.

Road traces: three case studies

Kilen

The experience gained from surveys along *Hærvejen* raised several new questions. Against the background of these, the site of crossings over the watercourse *Bredkær Bæk*, at the bottom of *Kilen* (part of the inlet *Limfjorden*) was examined (Figs. 1, 2). The tracks, which cross the valley over a c. 1 km wide zone, are possibly the most exceptional remains of ancient roads in Denmark. An interesting question in relation to this site concerns the extent to which the tracks were formed by water erosion during the Ice Age and the extent they are the result of traffic. *Kilen* is also interesting as two major road routes cross each other here in the river valley. Furthermore, there is evidence of considerable activity in the area as early as the Neolithic.

Traffic across the river valley made use of the water-eroded ravines in order to scale the steep slopes (Figs. 3, 4). This must have happened at a relatively early point in time as the tracks should be seen in association with the barrows that border the stretches of road. The eastern crossings are common to *Oldtidsvejen*, running between the *Viborg* area in the east and the North Sea, and the western version of *Hærvejen*, *Ravvejen*, running between south-western Jutland and the *Limfjord* (Figs. 1, 2).

Visible traces left by traffic in the landscape can link together with the aid of aerial photographs which create longer sequences, such that the routes of the ancient roads are revealed more clearly (Eriksen and Olesen 2002). This has also been recently confirmed by the Danish Agency for Culture's digital elevation model (DEM) (Fig. 4) which reveals even very tiny differences in the height of the terrain (Clemmensen 2010:4, 6, 8).⁴

The crossing at *Kilen* can be interpreted both as representing



Fig. 3 A crossing at Kilen. Travelling south: ramble down the hollow way, force the watercourse, stride up the hollow tracks and pass the barrows (see photo tag at Fig. 4). In prehistory and the Middle Ages, Kilen formed an open branch of the Limfjord. From the beginning, the landscape constituted a plateau, where melt water from the inland ice of the last Ice Age created a now submerged sub-glacial stream trench. Towards the south-west, the valley continues with Bredkær Bæk at its base and with the late-glacial erosion system of ravines running across the valley (Nielsen 1975:279ff, 303ff; Trap 1965:32-33, 215, 281). Photo: Torben Dehn, the Danish Agency for Culture.

a large intersection or crossroads, where the traffic routes at one particular time were largely coeval, possibly being used at different times of the year, and also as being completely separate and distinct in time. The road routes must be seen collectively as structures which were worn and eroded into the slopes over a very long period of time. Several Neolithic settlements on the plateau and on the slopes with cemeteries beyond them and rows of barrows alongside the tracks indicate that the traffic across the river valley is very ancient.⁴ There are not many records of either ancient monuments or finds from the Iron Age. However, wheel tracks are seen to cross Celtic fields (Fig. 4), and a Viking Age settlement has also been recorded on the plateau to the south of a more westerly crossing of the river valley (the Danish Agency for Culture 2012). As this place represents an important crossing point for the link across the *Limfjord*, trade and cattle droves have also left their marks in recent times. The hollow ways in the slopes may, furthermore, have provided access to the water mills that

⁴ Thanks to the isostatic land rise in northern Denmark the Neolithic beach line in this region may be slightly above present sea level, thus the watercourse might have been less accessible at the mouth by means of wading or 'bridging'. The zero line for transgression/regression is about 10 kilometres to the south of the site (the Danish Coastal Authority).

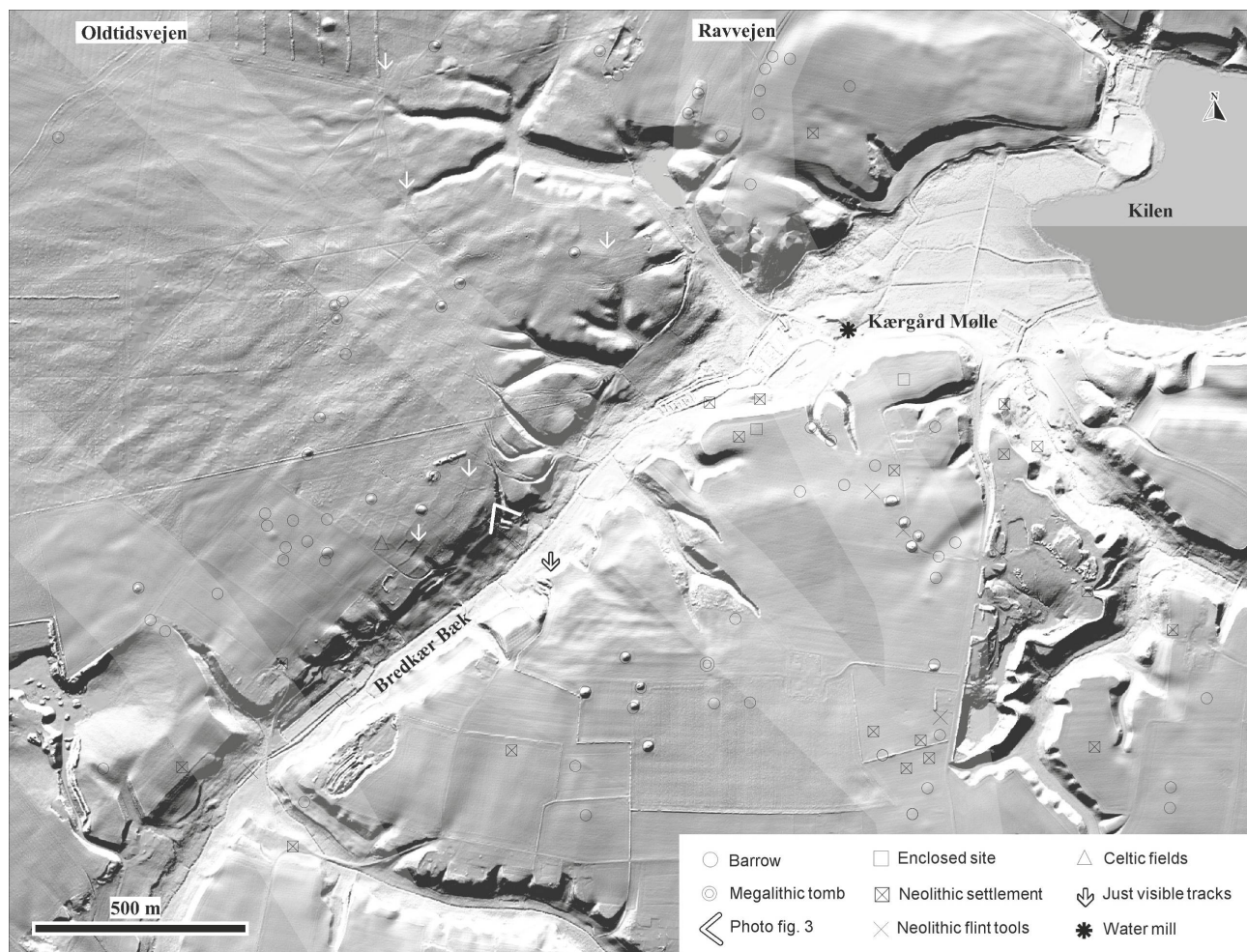


Fig. 4 The relief map (DEM), showing the crossings of the valley at the bottom of Kilen, reveals the many parallel bands and fans of tracks that pass between the burial mounds on the plateaus on each side of the valley, e.g. a group by a long barrow in the heathland to the north-west of the river valley, in order – as hollow ways or deep ravines – to scale the slopes to the north and south of the river.

Where a date is available, the mounds are Neolithic. Several collections of settlement finds, together with the remains of a house and pits, indicate the presence of Neolithic settlements on the plateau and the slopes. On the valley floor, the straightening out of the river and construction of two fish farms has now obliterated any traces of fords. On the plateau to the south of the valley, the tracks disappear into the field, e.g. in the direction of a group of barrows which include the remains of a passage grave. On the north-eastern part of the same plateau, the tracks and two very deep and slightly wider breaches in the slope run towards a row of barrows, including another long barrow (see also Lidegaard 1988:109-112, 127; Olesen and Skov 1989:69ff). On the headland, to the east and west of the two breaches, rows of system-ditches were detected by aerial reconnaissance; these may delimit Neolithic enclosed sites (Eriksen and Olesen 2002:26-29). © The National Survey and Cadastre. DEM: Niels-Christian Clemmensen, illustration: Claus Dam, the Danish Agency for Culture.

made use of *Bredkær Bæk* in historical times. In the Middle Ages the eastern crossings were replaced by a common bridge and main road constructed over the water mill *Kærgård Mølle* (Ringkøbing Amt 1992) (Fig. 4).

Øster Lem Hede

Around 50 km to the south of *Kilen*, to the east of the inlet *Ringkøbing Fjord* in western Jutland (Fig. 1), there is another example of how a traffic corridor has exploited the natural terrain. By the scheduled Celtic fields on the heath *Øster Lem Hede* (Fig. 5), road traces run between 40 and 70 m.a.s.l. over the southwestern heath-covered slope of the dissected edge of a sandy hilly landscape, offering a wide view over the fjord's flat foreland to the south-west (Trap 1965:32-33, 504). The tracks have both the character of local traffic and a major overland route and were made at different times.

Starting with the stretches of road with the earliest characteristics on the relief map (Fig. 5), the group of nine barrows, *Nihøje*, to the north-west of the *Øster Lem* heath, is presumed to represent a prehistoric crossroads based on the fact that this group of barrows is common to *Ravvejen* (Fig. 1) from southern Jutland to the *Limfjord* (here indicated by barrows along the western margin of the heath) and an east-west oriented row of barrows to the north of the heath (la Cour 1923; Lidegaard 1988:166-167; Egeberg 2004:51). On the heath-covered slope to the south and east of these two crossing barrow routes, a small track or livestock passage running between the numerous small fields was established along with these in the Pre-Roman Iron Age (Hatt 1949) (Figs. 5, 6). After the fields had been abandoned, a new broad spread of tracks cut diagonally south-east - some heading north-west facing *Nihøje* - across the slope between the valley and the plateau. The traces

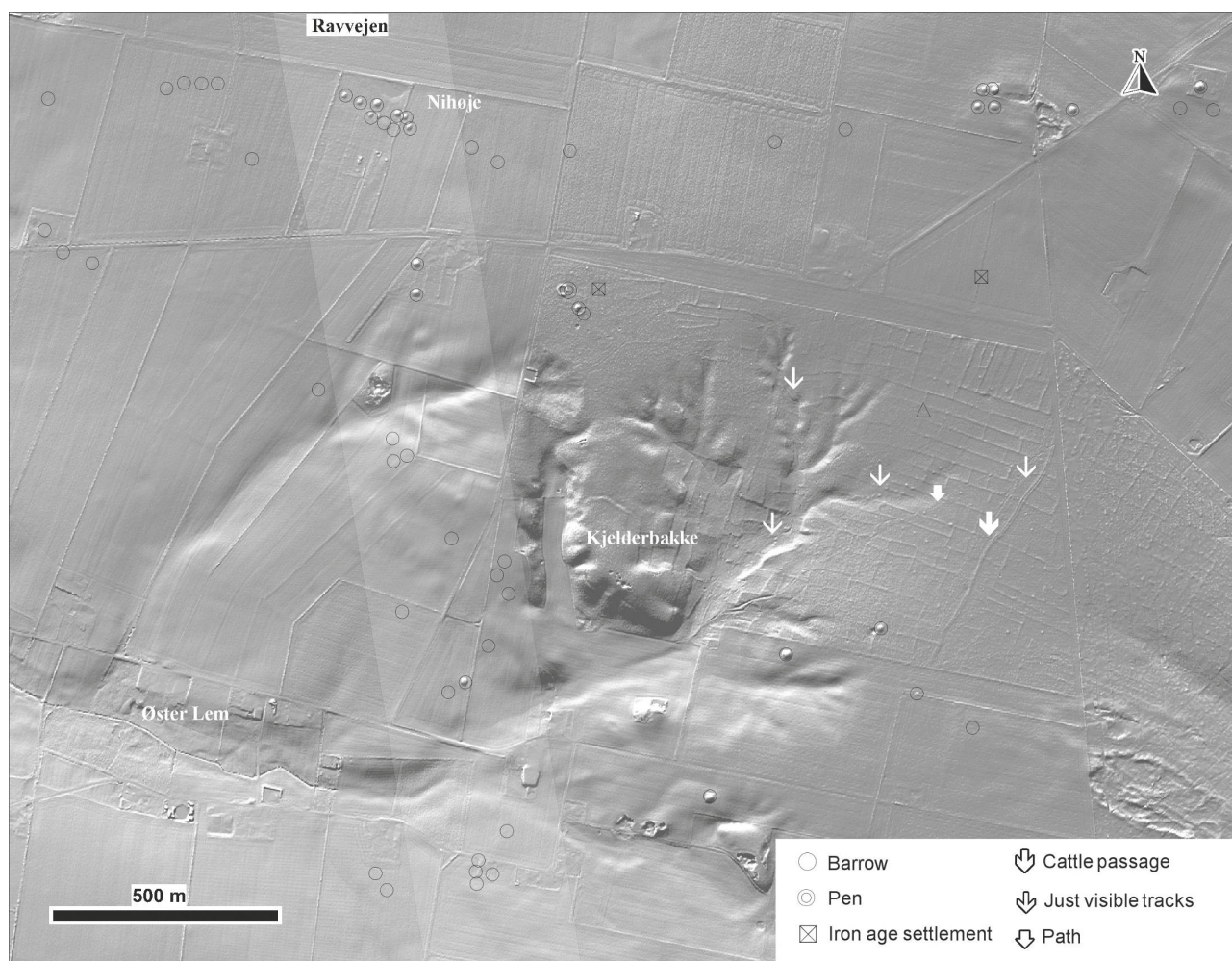


Fig. 5 Øster Lem Hede. On the Danish Agency for Culture's digital elevation model (relief map), Ravvejen (the Amber Road) can be recognized from a belt of barrows, probably in use during the Neolithic and Bronze Age, running along the western edge of the heath (Lidegaard 1988:164ff; see also aerial photos in Eriksen and Olesen 2002:37). To the east and west of Nihoje, a traversing row of barrows is also apparent. The heath was settled towards the end of the late Bronze Age or in the early Pre-Roman Iron Age. Overlapping with this phase, the entire slope – an area of rather more than 1 km² – was cultivated in the form of small rectangular Celtic fields (Eriksen 2001; Nielsen 2009:17). The shading effect of the field banks, small clearance cairns and barrows can be seen on the map. In the upper north-western corner of the heath, three house sites have been excavated, dating from the Pre-Roman Iron Age. Apparently coeval with the fields is a narrow track or livestock passage (Fig. 6), which is preserved over a distance of 400 m between the fields (Hatt 1949:92ff). On the plateau above the fields, remains have also been found of an Iron Age settlement. Perhaps the passage connects this with the fields and the pasture land. Later, a broad belt of wheel tracks cuts diagonally through the field banks, aiming towards the dissecting ravines which extend from the floor of the river valley up between the fields (Hatt 1949:93). From the map it can be seen that the ravines accommodate several parallel wheel tracks and hollow ways which make their way through the narrow pass at the foot of the hill, Kjelderbakke, towards the source of the stream (cf. kjelder = spring, bakke = hill, Jørgensen, B., 1982) and Øster Lem. In recent times, this road has re-emerged as a path. Its remains can be faintly seen on the relief map, whereas the earlier wheel tracks, crossing the fields above the ravines, are hardly visible. © The National Survey and Cadastre. DEM: Niels-Christian Clemmensen, illustration: Claus Dam, the Danish Agency for Culture.

left by traffic set solid and are 'preserved' both in the heathland and on the relief map (Fig. 5).⁵

In addition to the relief map, aerial photos show how the route of the later road exploited the old water-eroded ravines in order to ease access between the lower-lying areas and the plateau above

(Eriksen & Olesen 2002:89). On the floor of the river valley, these tracks meet Ravvejen. The solution to the mystery of whether the various routes were, at any point in time, in use simultaneously, or whether the tracks crossing the fields constitute a new, alternative route around Kjelderbakke, is hidden beneath the soil.

Jelling

In 1994, the Viking Age monuments at Jelling were incorporated into UNESCO's list over World Heritage Sites. To the south of the town, there is a road system which shows characteristics of long-term use by, among others, the Jelling kings (Fig. 7). The

⁵ The Danish Agency for Culture has, on the basis of the National Survey and Cadastre's contour data DTM (Digital Terrain Model), constructed a relief map, which under appropriate lighting gives a shading effect that emphasizes even small variations in the terrain. The data is an extract from the results of a national laser scan carried out from the air in which only those laser pulses which struck the earth are presented in the model. This method of data collection is known by the term LIDAR (Light Detection and Ranging) (Clemmensen 2010:4, 6, 8).

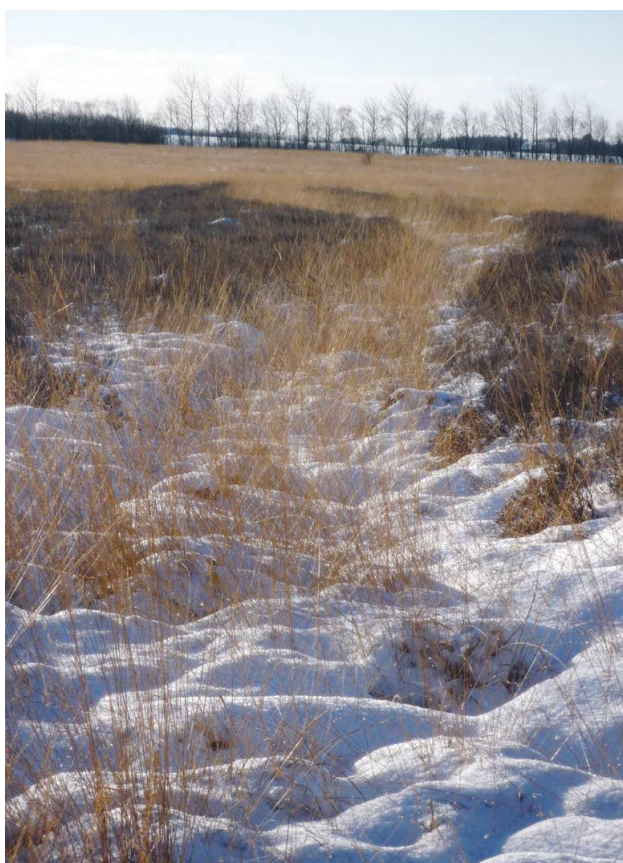


Fig. 6 In wintry weather, the Pre-Roman track or livestock passage on the heath of Øster Lem is revealed by the grass, which stands out yellow against the snow. Tracks left by traffic appear on heaths as green or yellow strips, because manure from the animals has enabled the grass to gain a footing. The sides of the passage also constitute a field bank out towards the fields (Hatt 1949:92ff). Photo: Torben Dehn, the Danish Agency for Culture.



Fig. 7 At the end of the lake Fårup Sø, there are several preserved stretches of systems of hollow ways, interwoven on the slope of the wood. The hollow ways lie on the steep northern side of a sub-glacial stream trench, with the lake and the river Grejs Å, which drains into Vejle Fjord, at its base (Trap 1964:778-779). Photo: Torben Dehn, the Danish Agency for Culture.

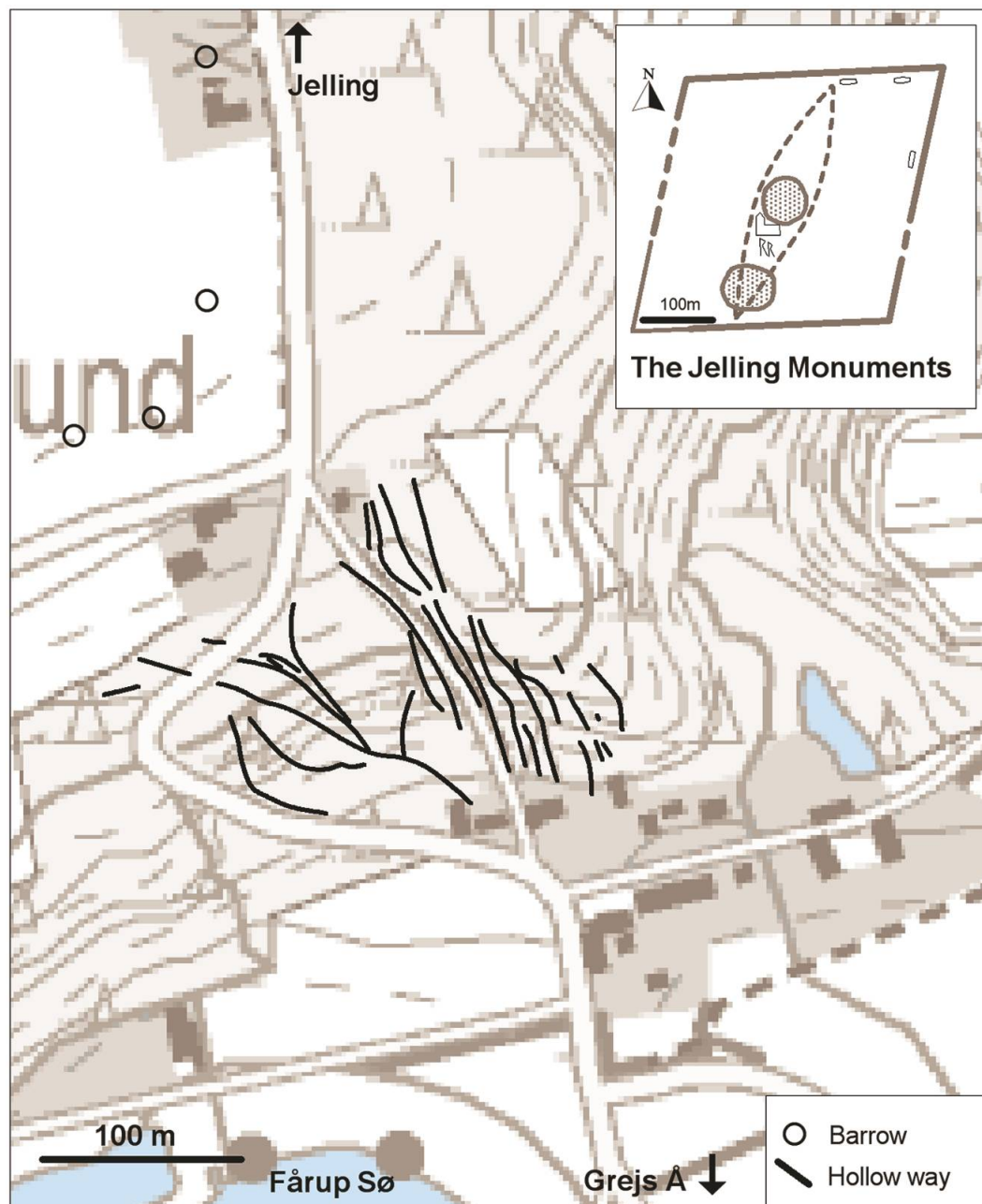


Fig. 8 Out of Jelling towards the south runs an older road bordered by settlement remains from the Pre-Roman Iron Age and the early and late Roman Iron Age with associated remains of cemeteries; in between these lie a number of undated barrows. The southern part of the road was relocated in the middle of the twentieth century, giving it an open serpentine curve in order to reduce the upward gradient. Its earliest predecessors lie preserved in the woods to the west and east of the old road: a broad tract of hollow ways. A hollow way to the west stands out as being wider and deeper than the rest; it is apparently also later as it is cut down through minor, shallower hollow roads. Shown on the nineteenth century map and here, this complex road situation had been simplified to give one direct constructed track cutting through the middle of the tract of hollow ways. Today this is used as a gravelled path and forest road. © The National Survey and Cadastre. Survey: Niels-Christian Clemmensen and Thomas Eriksen 2010, illustration: Claus Dam, the Danish Agency for Culture (the Jelling monuments, cf. the National Museum of Denmark 2012).

present-day highway represents perhaps the fourth generation of road routes running to the south of the town (Fig. 8).

In order to understand this road in its correct context, it must be seen in conjunction with *Hærvejen* running along the central ridge of Jutland (Fig. 1). To the north-west of *Jelling*, *Hærvejen* divides like the cascades of a waterfall towards the south and with changing centres through time. Opposite *Jelling*, the eastern route splits into two main tracks, again with several courses running towards the east and west, one of the eastern branches points towards the centre *Jelling* (Lidegaard 1977:8, 10, 39ff).

A report from 1589 tells that *Jelling birk* (judicial district) has always been owned by the king and that some of the Danish kings are buried there (Trap 1964:1118). During the Viking Age, *Jelling* was a very important place as a centre of power and the royal residence was situated here. This is confirmed by two rune stones raised by King Gorm and King Harald, two enormous barrows, the remains of a large ship tumulus and several old wooden buildings which were finally replaced by a stone church in the eleventh century. Archaeological investigations carried out in recent years have demonstrated the remains of several large buildings and a palisade encircling the whole structure (the National Museum of Denmark 2012).

The age of the oldest parts of the road system south of *Jelling* (Fig. 8) is unknown. Neither is it known when the individual tracks were used. It is probable that the road system constitutes part of the earlier main tracts or branches of *Hærvejen*. It has been suggested that, following *Jelling's* decreasing significance as a centre of power, another and more direct long-distance section of *Hærvejen*, located on the other side of the lake, took over much of the north-south traffic (Matthiessen 1971:58-62; Lidegaard 1977:43ff).

The road route at the end of *Fårup Sø* may be much older than the famous royal residence at *Jelling*. The settlement remains and the barrows along the road indicate this, and the site by the end of the lake provided an obvious ford, being where the watercourse, *Grejs Å*, widened and made a crossing possible. However, there is little doubt that the king used the road as a route to the river, *Vejle Å*, and a further c. 10 km to the south towards the bridge across *Ravninge Enge*; a wooden structure more than 700 m in length which, in the Viking Age, led across *Vejle* river valley (Jørgensen 1997).

The significance of the database and the records contained within it

What can we use it for?

The data that have been gathered provide a comprehensive overview of more than 2,300 localities showing traces of roads, tracks or related structures of some form or other. Around 30% of the recorded localities have not previously been described in the literature and 85% were not previously recorded in a national register (Bang 1997:190; Kristiansen 2002:17). The ancient monuments proved to be very diverse and many are well-preserved.

An overview is necessary in order to understand each individual road trace in a wider topographic and geographic context. This also applies in an administrative sense. In order to be able to define standards for protection and to select which road traces should be

scheduled, we must have information on their distribution and diversity. The database means that this is now possible.

A national overview of the surviving traces left by the traffic of the past provides – in addition to the actual traces themselves – also the opportunity to create a picture of developments in society and the transportation of people, products and animals along extended linear structures in both time and space.

The digitalization of the road trace data makes it possible to relate these to other ancient monuments and elements within the cultural environment. In this way, the road traces can contribute to placing other ancient monuments and elements within a wider landscape context and promotes an understanding and interpretation of the cultural landscape as a series of intact entities, cf. the road structures at *Kilen*, *Øster Lem* and *Jelling*.

Where do we go from here?

In further work it will be necessary to operate on the basis of the understanding that many road tracks are ‘long-term features’ – i.e. robust and resilient structures that are the result of developments over a long period of time and which have perhaps been used during the course of several millennia. It is also important that further local studies be carried out in which the road traces are put specifically into context relative to surrounding settlements, cemeteries etc. (cf. Egeberg 2004).

In general, attention should be focused on exploring the opportunities in the landscape for the passage of traffic at various points in time and also on geological-archaeological investigations aimed at, for example, discovering the degree to which ravines, as described at *Kilen*, were created by natural erosion or by wear from the passage of wheeled vehicles.

It remains important to carry out archaeological investigations of road traces in association with other ancient monuments, and also in wetland areas where there is the greatest possibility of finding datable material. Many such investigations have already been carried out which can serve as examples (such as Jørgensen 1977, 1982, 1987; Kunwald 1944, 1962; Hansen & Nielsen 1979; Egeberg 2004).

Last, but not least, a major process of scheduling awaits, in part because preserved road traces are threatened with destruction, and in part because they are extremely valuable relative to an understanding of the major over-arching aspects of the cultural landscape. The traces left by prehistoric and historic traffic must be acknowledged on equal terms with settlements and burial mounds.

Acknowledgement

The record would not have been possible without the data provided by the Danish archaeological museums, the county authorities and the state forestry districts. The amazing field-walking and recording was done with archaeologist Karsten Kristiansen, who also created the map-based database. The surveying at the *Jelling* site was carried out by Niels-Christian Clemmensen and Thomas Eriksen (the Danish Agency for Culture). I also wish to thank Marianne Rasmussen and Torben Dehn (the Danish Agency for Culture) for suggested improvements to earlier drafts of this article; Torben also for his tireless photographing. In preparation of the maps and figures I am especially grateful to Claus Dam

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HERITAGE STUDIES

CULTURAL HERITAGE: VALUES AND OWNERSHIP

Zbigniew Kobylński

Abstract: This article explores the question of ownership as it relates to cultural heritage. Considering examples of international and internal conflicts arising from the ownership of cultural heritage, the author proposes the adoption of the principle of free access to heritage values as the ideal which should be followed in attempts to resolve such conflicts.

Keywords: Cultural heritage, cultural resources, historical values, ownership right, free access

Cultural heritage: problems of definition

The concept of cultural heritage is being used increasingly often in the discourse of research and politics. However, there is no consensus on the definition of this term, and other notions, such as 'monuments', 'cultural goods' or 'cultural resources', which are sometimes used interchangeably. In trying to clarify the meanings of these terms, it must first be noted that all of the objects or phenomena to which they refer convey certain values, which - as Seneca would have it - have 'dignity'. These values can be called 'cultural' or 'spiritual', and can be understood as the result of collective efforts of humanity (Witkowska-Maksimczuk 2003: 83). Human creations which have spiritual value can therefore be called 'cultural goods' or 'cultural assets'. Such values can also be evoked by creations of nature: the Ayers Rock sandstone formation has important spiritual values for Australian Aborigines, and, in 1994, under the native name of Uluru-Kata Tjuta, was designated a UNESCO World Cultural and Natural Heritage site. Living beings can also have spiritual value: the Porcupine Herd of Caribou, numbering 120,000 animals moving within the vast area north of the Arctic Circle, has spiritual value for the Vuntut Gwitchin people living in northern Alaska and the Yukon Territory in North America (King 2006: 243).

We can therefore broadly define a 'cultural good' as every movable or immovable item, tangible or intangible, contemporary or historical, which is of relevance to heritage and cultural development thanks to its spiritual values (Małachowicz 2007: 16). 'Cultural heritage' is, however, only that part of these historical cultural goods which has been considered valuable by subsequent previous generations and thus has survived to the present times. Although the notion of inheritance implies lack of selection of that which is being inherited, human societies often consider part of this as unworthy of preservation, or even undesirable. This heritage then becomes an unwanted legacy, which ancient writers referred to as *hereditas damnosa* (cf. Gutowska 2003). Cultural heritage, although composed of the remains of history, is therefore a product of the present, created in a continuous process of transformations (e.g. Schouten 1995; Tomaszewski 2000).

For the theory and practice of historical preservation and conservation it has been important to recognize in the last quarter of the twentieth century that cultural phenomena have characteristics analogous to natural resources (Kobylński 2001). They are limited, non-renewable and vulnerable to damage both as a result of natural decay and of excessive and uncontrolled

consumption. Resources are the subject of someone's property and are usually subject to exploitation, and are therefore managed in someone's interest. The concept of 'cultural resources' thus opens up new perspectives for theoretical reflection and practical activities.

Cultural heritage replicates by including an increasing number of phenomena not previously recognized as heritage (one may recall the recognition of modernist architecture as cultural heritage, e.g. Gutowska 2008, or broadening the scope of archaeological heritage by including remains from battlefields of the twentieth century, e.g. Scott et al. 2009). Contrary to some opinions (e.g. Carman 1998; Holtorf & Schadla-Hall 1999; Holtorf 2001), this does not mean that cultural heritage resources are renewable, because a definite number of artefacts of a certain category have been created in the past, and - once destroyed - they will no longer appear in their authentic form (Darvill 1993: 6).

One of the characteristic features of contemporary interest in history is the phenomenon of the anti-elitarianism of the cultural heritage, an interest in everyday life in the past, in 'ordinary' objects once used by 'ordinary' people (Urry 2007: 191-192). This phenomenon is seen in the case of archaeological heritage, which - once identified mainly with ancient art - currently comprises mostly 'rubbish'; as Pomian (1996: 50) says: waste is transformed into semiophores. Cultural heritage consists primarily of objects which were excluded from a living socio-cultural system: the phenomenon of collecting is the active, selective and passionate process of acquiring and possessing things, which are exempted from ordinary usage (Belk 1995: 67; Dant 2007: 160). In this sense, modern museums have much in common with the temples of the Greeks and Romans: an object that enters both a museum and the sacred space of a temple is equally excluded from any utilitarian operation (Harbison 2001: 113-114).

Values of cultural heritage

The seminal publication in 1903 by Alois Riegl (1858-1905) - the first modern theoretician of historical preservation and conservation - has initiated lively discussions about what kinds of values are transported by cultural heritage (Kobylński 2001: 59-81 & 2009: 28-38). Although multiplicity and complexity of these values is evident, many scholars consider cognitive and emotional values as the most important criteria for the recognition of an object as belonging to this category, often describing them jointly as 'historical values' (e.g. Kurzątkowski 1989: 80-81).

A value of a particular object of cultural heritage, however, can be measured in three completely different dimensions: financial, functional and symbolic (Carman 2005: 51-59). The financial measurement scale results from the treatment of heritage as a commodity (cf. Appadurai 1986; Kopytoff 1986). Such measurements can be a result of not only the existence of a real market for cultural heritage objects, but also of accounting and reporting procedures, which in many countries require that public institutions - such as museums - define the monetary value of their collections. Monetary value can be defined also in relation to properties, even those which are unlikely to ever be traded, such as churches and monuments. In such a case, the willingness to bear the costs of protection and preservation of a particular object, place or part of the landscape, declared by the members of a surveyed community, can be measured (WTP - *willingness-to-pay* coefficient; Navrud & Ready 2002). Financial assessment, which may be used to determine a value of an archaeological site, or to calculate the loss incurred by society due to the destruction of such site, can be the estimated cost of conducting excavations on its area and of all the necessary post-excavation works. However, even if the financial value is an objective one, and allows us to apply the universal language of economic discourse, which might be necessary for example when planning the development of a state, region or locality, it does not reflect the real value of cultural heritage for the public.

The second measurement scale is the dimension of usefulness, or - in other words - utilitarian functionality of heritage, both the actual (consumption value) and the potential (Frey & Pommerehne 1989). The 'consumption' of cultural heritage can take the form of scientific research, tourism and recreation, legitimization of political decisions, promotion of social integration and maintenance of social solidarity, use of images of heritage in commercial advertising, as well as trade (usually illegal) of heritage objects, undertaken in order to achieve financial benefits. All of these diverse forms of activities share a specific attitude towards cultural heritage, based on the pursuit of 'profit', either social, or purely financial. Such an approach allows for relatively objective comparisons of different objects based on certain established criteria and measurement scales; it can therefore be readily used by institutions appointed by the state for the conservation and heritage management, which is important if a selection is an indispensable mechanism in the preservation of cultural heritage (a criticism of this way of thinking has been presented in Kobyliński 2001).

The third - symbolic - perspective of a cultural heritage assessment is based on the belief that the primary purpose of cultural heritage is to be a form of 'cultural capital', which remains beyond the reach of economics. Its goal is to be useless, while invaluable (Carman 2005: 56-59).

The value of cultural heritage is therefore multidimensional and can be measured on many scales. Some of the values are universal, transcendent, objective and unconditional. Other values are related to the particular social or cultural context. Such a subjective category is the symbolic-associative value: the ability of cultural heritage to inspire and foster feelings of belonging to an ethnic group or to incite patriotic emotions. In times of globalization and Europeanization, this quality of cultural heritage could be regarded as sustaining the boundaries and intercultural barriers contrary to the trend towards integration of humanity. Examples of the political use of cultural heritage to raise walls between ethnic groups or nations would seem to indicate that just such - anachronistic - is the role of heritage today. The UNESCO

Convention on the Protection and Promotion of the Diversity of Cultural Expressions of 2005 clearly recognizes, however, that cultural diversity is a value worthy of protection and promotion as one of the fundamental freedoms and the common heritage of humanity. The need to find one's own roots - paradoxically - has become intensified in the time of globalization (Kula 2004: 179).

The objective value of cultural heritage is therefore its very existence and its diversity. An objective value is also an artistic merit or formal excellence, while an aesthetic value is a relational value, which is partly or totally subjective. Another objective value of cultural heritage is a cognitive value: it is historical evidence, enabling us to explore the past. This axiological objectivism entails the universal imperative of protecting cultural heritage. Protection of world cultural heritage is apparent from the belief that every culture contains goods which are valuable not only for its participants, but for all humanity. Recognition of the postulate of universal cultural heritage protection is therefore based on the assumption of an objective and autotelic nature of cultural values. It is also based on the perception of the imperfection of the existence of objects transporting these values. The protection of cultural objects is necessary because they are characterized by a greater or lesser degree of fragility, which entails the possibility of their annihilation.

Ownership of cultural heritage

Who owns cultural heritage? An answer to this question - essential for theory and practice of management of this heritage - is extremely difficult to provide. There is no unanimity in this respect among various authors, and the multiplicity and intensity of conflicts arising around this issue demonstrates the extent of its complexity.

Sherry Hutt (2004) has singled out six different concepts of ownership of cultural heritage:

- The moralistic theory: cultural heritage should be owned by its creators and their heirs, and an appropriation of the artefacts and accompanying information by collectors, researchers, libraries or museums should not have happened;
- The internationalist theory: cultural resources are the property of all humanity, and they should belong to whoever can provide the best care for them, regardless of where they originate;
- The nationalist theory: cultural heritage should belong to the nation and its value is greatest when it is kept in the place of its origin; it is therefore legitimate to restrict the free export of cultural goods abroad;
- The theory of the primacy of law: during the process of the settlement of conflicts on historical heritage the most important is to determine its legal status and respect the legitimate rights of property;
- The theory of the primacy of science: a fundamental benefit to humanity is the right to acquire knowledge and thus the right to conduct scientific research should be more important than any other considerations when dealing with conflicts regarding ownership of cultural heritage;
- The theory of the primacy of the market: objects of historical heritage should be subject of free trade, regulated only by the rights of the market.

The analysis of various examples of conflicts arising around the ownership of cultural heritage (Kobyliński 2009) leads to the conclusion that none of these theories is completely justifiable.

As Carman (2005: 29-31) has reminded us, in law and economics usually four basic forms of ownership are distinguished: state ownership, private ownership, group ownership and free access. In the case of state ownership the state has the exclusive right to decide on access to an object on the part of individuals, and this right is realized through agencies, services and institutions appointed by the state. In the case of private property, exclusive rights are granted to an individual to decide how to use a given object. In the case of group ownership, the property right is divided among members of a group of people, who may prevent the non-members from using an object, but their own right to free exercise of this facility is limited not only by requirement of social acceptability, but - additionally - by the need to respect rights of co-owners. In the case of free access no property rights are stated.

Proponents of the theory of primacy of market in the field of intellectual and cultural heritage refer frequently to the beginnings of scholarly disciplines such as archaeology or art history, which have long been connected with private collecting. The history of collecting antiquities and works of contemporary art, however, allows us to formulate some important conclusions on the relationship between private property and cultural heritage:

- Collecting antiquities was one of the sources of both the history of art and of archaeology, just as collecting of artefacts of non-European cultures has become a source of ethnology. However, contemporary research on cultural heritage does not have anything to do with collecting, and any attempt to maintain the view that archaeology should be understood only as an expert knowledge of collected artefacts would be detrimental to the development of this discipline.
- Private collecting of works of art and historical artefacts in most cases led to the creation of public museum collections (Pomian 1996: 316-337), but if this did not happen, the death of a collector led to the dispersion and forfeiture of a collection.
- Collecting contemporary art is a positive phenomenon, since the art market plays the function of 'quality control', while a patronage of the public may distort freedom in art by rejecting new currents, as happened in the nineteenth-century France, or by stimulating ideologically desirable styles or themes, such as in the Nazi era in Germany. Public patronage can also affect the level of artistic creativity and originality, if every work created by an artist is automatically purchased by a state museum;
- Collecting of antiquities and ethnographic artefacts, however, has always been contrary to the idea of conservation. While collecting is stimulated by the desire of personal possession of objects, preservation of cultural heritage is stimulated by the wish to preserve its existence for public benefit and is associated mostly with the resignation of a personal possession. Moreover, while collecting involves extracting objects from their proper contexts, the modern doctrine of conservation assumes priority for leaving them in situ.

It can therefore be argued that cultural heritage, in contrast to the heritage of an individual, by definition cannot be subject to the rules of private property. In the field of environmental protection, in relation to ownership of certain assets or resources, such as water or vegetation, there are very often serious constraints on private property based on public interest (for example, you cannot pollute the environment, even within the boundaries of your property). In various countries of the world such a mixed form of ownership occurs in the case of cultural heritage objects, both movable and immovable (Cleere ed. 1984, 1989; Kobylński

ed. 1998; Messenger & Smith eds. 2010). Items included in this category may be owned by the state in the sense that private owners cannot actually exercise in full their ownership functions in relation to these objects, because they cannot be exported abroad, destroyed, altered and sometimes even sold without the consent of the state. This idea of restriction of private ownership for the public benefit is legitimized by international documents. The *Universal Declaration of Human Rights* of 1948 states that 'Everyone has the right freely to participate in the cultural life of the community, to enjoy the arts and to share in scientific advancement and its benefits' and the *International Covenant on Economic, Social and Cultural Rights* of 1966 states that the State parties 'recognize the right of everyone to take part in cultural life'. Consequently, First Protocol of 1952 to the *European Convention for the Protection of Human Rights and Fundamental Freedoms* of 1950 states that 'No one shall be deprived of his possessions except in the public interest' and the 1969 *American Convention on Human Rights* states that 'Everyone has the right to the use and enjoyment of his property. The law may subordinate such use and enjoyment to the interest of society'. Since the category of cultural heritage is very broad and usually not clearly legally defined, restricting the rights of private property concerns usually only the distinct class of objects included in a special register kept by the state.

The idea of public ownership of cultural heritage was probably expressed for the first time in the turbulent times of the French Revolution (Jokilehto 1999: 69-71; Choay 2001: 63-81). In modern times, beginning with the *UNESCO Convention for the Protection of Cultural Property in the Event of Armed Conflict* adopted in 1954, in the international legislation and in the doctrine of preservation exists the concept of trans-national ownership of cultural heritage, which has gained its fullest expression in the adoption of the 1972 *UNESCO Convention concerning the Protection of the World Cultural and Natural Heritage*, a result of which is that it is understood that the World Heritage sites belong to all the peoples of the world, irrespective of the actual legal ownership. Other international documents in which this idea has been expressed are e.g. *UNESCO Recommendation on International Principles Applicable to Archaeological Excavations* (1956), *ICOMOS Charter for the Protection and Management of the Archaeological Heritage* (1990), *ICOMOS Charter on the Protection and Management of Underwater Cultural Heritage* (1996), as well as the ethical codes of various professional archaeological organizations, e.g. the *Code of Practice* of the European Association of Archaeologists, or the *Code of Professional Standards* of the Archaeological Institute of America.

This principle implies the shared responsibility of mankind for the protection of historical heritage on the territory of the country, which alone cannot deal with this problem, due to technical or financial difficulties, or due to a lack of skilled personnel (e.g. *European Convention on the Protection of the Archaeological Heritage (revised)*, 1992; one of the best examples of international solidarity in this respect was rescuing the ancient Egyptian monuments threatened by the construction of Lake Naser in the 1960s, and recently the internationally-financed rebuilding of the historical bridge at Mostar, being a symbol of multicultural and multiethnic Balkan society), but also the responsibility of individual states to other states and nations of the world for the protection and preservation of the common human cultural heritage located in their territory. This duty has been clearly established by international documents such as e.g. *UNESCO Convention on the Means of Prohibiting and Preventing the Illicit Import, Export and Transfer of Ownership of Cultural Property*

(1970); UNESCO *Recommendation concerning the Protection, at National Level, of the Cultural and Natural Heritage* (1972); UNESCO *Recommendation concerning the safeguarding and contemporary role of historical areas* (1976); or UNESCO *Recommendation for the Protection of Movable Cultural Property* (1978).

Since the 1980s, however, there has also been a notable retreat from the vision of universal and global ownership of cultural property in the direction of the concept of national or regional ownership. This was a result of the growing awareness that historical heritage serves primarily as a focal point for cultural identification and its historical importance is the greatest for the cultural group who identifies itself with this heritage. It was also realized that some interpretations of the noble idea of 'cultural internationalism' can imply potential dangers for historical heritage, when this idea is understood as a legitimization of liberalization in the trade of antiquities and a justification of their massive export from the Third World in the times of colonialism.

Indeed, if antiquities are the property of all humanity, it can be argued that it does not matter where they are located at the moment; for example if the so-called Elgin Marbles are located on the Acropolis of Athens, or in the British Museum in London (Kobyliński 2009: 153-163, and references). An idea of the so-called 'encyclopedic museums' has been put forward, which should collect artefacts from around the world, regardless of their contexts, and how they were gained, and not respecting any moral rights of citizens of particular states to their cultural heritage. Referring to the inability of poorer countries to ensure adequate protection of their heritage and stressing that the 'antiquities without context' still retain universal aesthetic, artistic and symbolic values, it is claimed that only such an 'encyclopedic museum' makes it possible to contemplate the cultural heritage of all mankind in a way that is supposedly free from nationalism (Cuno 2008).

The assumption of public ownership of cultural heritage - regardless of whether we understand this as limited to an ethnic group, a nation or a state, a region, or as universal property of humankind - entails important practical implications: in relation to cultural heritage it is reasonable and justifiable to limit the individual property rights; the state, acting on behalf of the public interest, has the right and duty to take ownership of all or part of the cultural heritage and to create institutions and agencies equipped with mechanisms for administrative decisions to realize the obligation for the protection and preservation of heritage. Appointment of national administrative bodies protecting and managing the resources of cultural heritage was requested by international normative documents issued by UNESCO, such as *Recommendation Concerning the Safeguarding of the Beauty and Character of Landscapes and Sites* (1962); *Recommendation on the Means of Prohibiting and Preventing the Illicit Export, Import and Transfer of Ownership of Cultural Property* (1964); *Recommendation Concerning the Preservation of Cultural Property Endangered by Public or Private Works* (1968); *Recommendation Concerning the Protection, at National Level, of the Cultural and Natural Heritage* (1972) as well as *Convention on the Means of Prohibiting and Preventing the Illicit Import and Transfer of Ownership of Cultural Property* (1970).

The lofty idea underlying the national or state ownership of cultural heritage often became a source of conflicts. Such conflicts have international character - e.g. disputes on ownership of underwater cultural heritage between European states and

coastal states of Latin America, or disputes on the restitution and repatriation of historical objects displaced during wars into the territories of other countries. They also sometimes have character of conflicts between groups inhabiting the same state - e.g. disputes on ownership of cultural heritage of ethnic and religious minorities, best exemplified by the problem of reburial of palaeo-Indian remains excavated by archaeologists, or by claims of Australian Aborigines and Maori of New Zealand of rights to archaeological finds and sites (Kobyliński 2009 and references).

State ownership does not therefore implement fully the idea of public ownership. It simply means the transfer of the principles of private property to the state, while individual citizens in many cases are still deprived of the possibility of enjoying the benefits of cultural heritage. Moreover, public institutions in my view are today behaving like private owners, denying individuals the right to certain forms of consumption of the heritage, or hindering it significantly. Though these institutions generally declare that they are merely custodians or guardians of cultural heritage, in the present situation of the primacy of economics and the need to seek extra-budgetary funds, their original mission of service to the public is subordinated to the requirements of economic efficiency. This process is accompanied by treating the cultural heritage objects, which have been entrusted to the care of these institutions, and even of the information about them, as their exclusive property.

If state ownership is not able to fully realize the idea of public ownership of cultural heritage, it seems that in modern democratic society this idea is realized by the implementation of the principle of free access. Historical roots of the free access can be found in the medieval English rights of way, allowing anyone to cross private property boundaries. This idea has been realized in the contemporary international regulations concerning the use of airspace (Lessing 2004), extra-terrestrial space, the arctic areas of the northern and southern hemisphere, and the open sea. In the field of culture and research this idea was applied only in the late twentieth century, as a result of the development of the global network created by the Internet, stimulating individuals and institutions to offer free public access to their artistic and scientific works, images, recorded audio or movie files.

In 1983 Richard Stallman initiated the movement for free computer software (Williams 2002). In 1987 the first free scientific journal, *New Horizons in Adult Education*, was made accessible on the Internet. In 2001 Wikipedia - a free online encyclopedia - was created. Full texts of books began to be freely published on the Internet, both those for which the term of copyright has expired, and those for which the authors and publishers have given their consent. There are also free databases of digital images of paintings, drawings, photographs and sounds, creating public virtual collections of cultural heritage objects, which are physically kept in various museums and research institutions.

The principle of free and common access to the cultural heritage - which in my opinion should be the fundamental aim of any cultural heritage management - should be obviously understood only as the right of nondestructive use of values, the carrier of which is this heritage, which has nothing to do with legal ownership of the historic substance. If the right to access and nondestructive use is assured (as is the case in English law on the public right to recreational use of private land - *Positive access management* 2004), it does not matter who owns the substance of the object. The object is then in the public domain in the sense that everyone can enjoy the spiritual values which it carries. To achieve this

goal it is not at all necessary to expropriate the private owners of individual cultural heritage objects. In practice, the idea of public ownership of cultural heritage is sufficiently realized if visual perception of an object and understanding of its value is made possible. It does not, however, entail a need to provide everyone with the opportunity of utilitarian use of the substance of such an object, or gain any material benefits from it.

The principle of public ownership of cultural heritage also entails the common public right to decide about activities directed at cultural heritage, which could undermine the public's right to its perception and enjoyment. This means the need for public control of the use of cultural heritage sites, both those which are state property, and those which are in private hands. With regard to cultural heritage it is therefore not possible to realize fully the principle of decentralization of power, self-governance and subsidiarity, because cultural heritage is not an exclusive property of any community, whose decisions may be determined by local priorities, without regard for the public interests in the wider, even global, sense.

However, it is also undisputed that in times of democratization of public life, along with the transfer of functions of the state to the hands of self-governing civil society, the role of agencies operating in the public interest must also change – from the imperative to the advisory. Also the criteria for evaluating cultural heritage must change from consulting the experts only to taking into account the views of all interested groups and individuals. Management of cultural heritage (understood as making decisions on how to use cultural heritage so as to obtain the best possible long-term benefit for present generations while preserving also the opportunity to meet the needs and aspirations of future generations) in the era of civil society must, therefore, include not only educating the public, but also negotiating such conservation solutions which would be favourable – or at least acceptable – for different interested groups and individuals.

A danger of democracy is the inability to use the gift of freedom wisely. While freedom is a fundamental value of modern civilization, often its pathologies can be observed, leading to selfishness and individualism. Such a pathology of freedom is certainly an attempt to dominate the theory and practice of protection of cultural heritage by the arguments in favour of free use of substance of cultural heritage, including the destructive use (by 'treasure hunters' and other similar groups). In my opinion a pathology of freedom is also the 'Disneylandization' of cultural heritage: creation of simulacra instead of protection of authenticity of historical substance. Even under conditions of state deregulation, there is still the need for scholarly expertise.

The adoption of the principle of free access cannot resolve conflicts over the ownership of cultural heritage when the opposing sides aim at exclusive rights to the substance of objects. In such cases the criterion for resolving a conflict should be, in my opinion, ethical, rather than legal or political – this body should be entitled to hold the object in question, for which it has greater associative-symbolic value. In settlement of such disputes the international experts, appointed for example by UNESCO, should play the role of arbitrators. Regardless of the final decision on ownership, objects of cultural heritage should be made as widely accessible as possible, in accordance with the principle of free access to cultural values. There will occur certainly also such situations where respect for the moral rights of individuals or groups to certain objects of cultural heritage will be incompatible with the possibility of making these objects accessible. That is

the case of objects of worship, which are still used in ceremonies and rituals, e.g. in the culture of Native Americans or Australian Aborigines. In my opinion these items should not be regarded as cultural heritage because they were not excluded from circulation in a living socio-cultural system.

Conclusion

The variety of conflicts over the ownership of cultural heritage can be structured as follows:

conflicts concerning objects forcefully and prematurely excluded from circulation in a living socio-cultural system (e.g. family heirlooms nationalized by communist governments after World War II, sacred objects of Native American nations);

conflicts over cultural heritage which have an unquestionably high associative-symbolic value for a certain identifiable ethnic or national group deprived of these goods as a result of historical events (e.g. war booty or colonial spoils);

conflicts over cultural heritage objects which are being appropriated by individuals or groups because of selfish reasons, so that the public rights of free access and nondestructive use of cultural heritage are limited (e.g. archaeological sites looted, and antiquities illegally sold, but also, e.g. inadequate public information on results of scientific studies on historic heritage).

While in the first two cases the conflicts should be resolved in favour of individuals or groups which can prove historic and cultural ties with the disputed objects, in the third case the public interest must be regarded as absolutely paramount. The problem of ownership of cultural heritage is therefore in my opinion not a legal problem, but an ethical one. Cultural heritage resources should be regarded as public domain, to which all members of society must have access and on which they are entitled to be informed fully and understandably, which they have the right to use in any and every non-destructive way and for which they also are all equally responsible. The use by the individual or group of the value of cultural heritage cannot confine rights of other individuals and groups, and therefore it is necessary to control the public uses of cultural heritage. This principle of universal accountability and public scrutiny should apply to everyone, including archaeologists, whose use of cultural heritage should also – no matter whether we like it or not – be subject to public control.

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THE MANAGEMENT OF HERITAGE SITES - IN NEED OF A VITAL SPARK?

Maria Persson and Anita Synnestvedt

Abstract: The authors both have backgrounds in Heritage Management, both having completed the Masters course at the University of Gothenburg initiated by Kristian Kristiansen. This course had fresh, new and sometimes provocative views on heritage management - which seemed to provide a vital spark to the subject, and still does. In this paper we draw on the experience of this programme and consider whether Swedish heritage management is still in need of a vital spark, despite for example the last 10 years of lively discussions on heritage management, as well as 'Operation Heritage'. The heritage site Pilane in Bohuslän, Sweden, will be used as an example to examine these issues. Since 2007 Pilane has been the arena for an international sculpture exhibition that each season has set up new and spectacular sculptures in the landscape surrounding the ancient remains at Pilane. In this article we will discuss the importance of a heritage site such as Pilane and try to explain the popularity of it - and also why it has been questioned.

Keywords: Pilane, burial ground, heritage management, interpretation, experience, Iron Age, contemporary art, value

Introduction

In 2002 a new Masters of Arts programme began at the Department of Archaeology in Gothenburg, initiated by Kristian Kristiansen. It was called *Archaeology, Cultural Heritage and Society*. The aim of the programme was to develop a critical understanding of how heritage both as an idea and a practice occurs and is expressed in contemporary society (Kursplan 2002). The authors both took part in the programme, Synnestvedt in 2003 and Persson in 2005. The course provided the opportunity to discuss different issues and perspectives such as: the concept of cultural heritage, the history and politics of cultural heritage and planning management and the use of cultural heritage (Kursplan 2002). After taking this course both authors were accepted for PhD degrees in Archaeology at the University of Gothenburg. During the time of the PhD education there were many occasions where the former Masters programme stood out as new, fresh and innovative. We have both taken part in different international PhD courses as well as in heritage conferences where we have had the opportunity to meet colleagues from different countries and universities. In a lot of discussions our former education in heritage management seemed very provocative as it presented a lot of new ideas in the matter. In this essay we will once again focus on this issue and present a Swedish heritage site that has been the arena of many debates in this matter. It is an example of a minor site that has changed into a huge attraction. All around the world there are millions of heritage sites of different kinds. Many are forgotten and poorly managed; others are tourist centres and arenas for theatre, concerts and art exhibitions. Our example is to be considered in a Swedish context and will be discussed in relation to laws and management plans of Sweden. Our focus and interest in this essay is a discussion about how different kinds of interpretation¹ of heritage sites might encourage new groups of visitors and increase the number of visitors to the site.

¹ Interpretation is not a field of its own in Sweden as it is for example in USA and Great Britain; therefore we would like to clarify the term Interpretation. The term as being used in English speaking countries and connected to cultural heritage includes methods and theories that makes history accessible, entertaining, interesting and informative to a broad audience (for this see for example Carter 2005; Ham 1992; Tilden 1957 [1994]).

The prehistoric site Pilane

Pilane, Bohuslän, Klövedal (Riksantikvarieämbetet (Raä) [English: Swedish National Heritage Board] 105:1) is one of western Sweden's largest burial grounds. It is situated on the island of Tjörn, about 60 kilometres north of Gothenburg, on the Swedish west coast. Pilane consists of about 80 ancient remains: 57 round stone settings, 10 mounds, 7 stone circles and 6 raised stones (Fornminnesregistret [FMIS, The Archaeological Sites and Monuments database] Klövedal Raä 105:1). The majority of the remains date to the Middle Iron Age, AD 0-600, but the burial ground has not been excavated. Several Stone Age remains close to the burial ground indicate a long continuity of settlements in the area. The oldest findings are dated 8000 BP. Finds also show an Iron Age settlement, which may indicate that Pilane served as a burial ground for this settlement. There is also a Bronze Age rock carving site in the area. The burial ground is situated between two mountain ridges close to the sea and the landscape bears witness to having been a grazing area for a very long time. During prehistory this vicinity was even closer; the burial ground is now 40-45 metres above present sea level. Pilane is a national site of interest and is owned by the National Heritage board (FMIS, Pilane homepage, Raä: Pilane).

The heritage site Pilane as a scene for contemporary art

In June 2007 the exhibition *Samtida skulptur i ett forntida landskap* (*Contemporary sculptures in a pre-historic landscape*) was initiated at the heritage site Pilane. Since then there has been a new exhibition each year. The sixth one ended in September 2012. Peter Lennby who owns the farm, neighbour to the remains was the initiating force creating the exhibition. Lennby arrived to the area, after many years as a TV producer in Swedish television, and his aim was to have sheep farming at the site.

In 2002 the area was rather overgrown and the authorities therefore initiated a management plan. New panels were set up and the area was cleared for bushes and unwanted vegetation; it was during this process that the ancient remains became more visible and accesible. Together with the authorities Lennby discussed a long



Fig. 1 Pilane's location on the island of Tjörn, north of Gothenburg on the Swedish west coast.

term plan for the site that included sheep farming. But Peter Lennby didn't settle with the sheep alone: he says that he finds it important to use this kind of environment for purposes other than just preserving an historical memory or farming sheep, and thus the idea of using the site for contemporary art was initiated. The sponsors, heritage management and artists felt the same way, and an agreement for conducting exhibitions was reached. In the selection of sculptures for the site, Lennby is thoughtful about what should be shown here since his aim is that the sculptures should comment on and complete the ancient remains as well as the landscape. Therefore, he says, it is not just the beautiful that is desirable, but even the difficult and awkward that is in need of being discussed (Synnestvedt 2008: 340-342).

Pilane - a heritage site in transformation

Since 2007 when the first exhibition opened there have been an increasing number of visitors to the site. Approximately 60,000 visitors come each year during the season from June to September (Raä Pilane). The estimated number of visitors before the exhibitions was about 1,000 a year (Zeljko 2010). This escalating number of people of course has implications in many areas. The parking lot has been extended, toilets have been set up, an entry fee is taken for the exhibition (although not if you just want to visit the ancient remains), a small visitors centre has been set up and questions regarding the effects of these large groups of visitors on the ancient remains have been asked. The project 'Contemporary

sculpture in a prehistoric landscape' at Pilane has been questioned, criticized but also acclaimed and much-admired (see for example Bjarneberg 2008; Brodow 2008; Dahlberg 2008; Jonson 2008; Larsdotter 2008; Magnusson 2010; Malmberg 2008; Manker 2009, 2010; Mattsson 2010; Persson 2008; Rosen, von. 2007; Widegren 2010; and Internetforums such as 'Arkeologiforum'. For a list of BlogSpot's concerning Pilane see: <http://www.pilane.org/aktuell.htm>). Even in 2010, four years after the exhibition opened with an approximate total of 200,000 visitors, there are still voices which argue that Pilane is an inappropriate site for sculpture exhibitions. As an example, the writer Ellen Mattsson has argued in *Göteborgs-Posten* (daily press in Gothenburg, July 2010) that the sculptures 'speaks so loudly' among the ancient stones, which in her view is a bad thing (*Göteborgs-Posten* 2010-07-26). The sculptures are also regarded by some as a threat to the ancient remains. This can only be put down to misunderstanding; there is nothing in the exhibition that damages the monuments in any way. In fact, there are no sculptures placed on any of the ancient monuments, only in a close vicinity to them. Most of the sculptures are removed after each season (June – September). If you visit the site during late autumn, winter and spring you will notice that there are hardly any recordable traces left at the site of the earlier presence of the sculptures. Instead we argue that the exhibition enhances the experience of the prehistoric context in an extraordinary way as we consider the art and the ancient remains to enrich each other and together they make Pilane a unique experience for the visitor, which we will explain further below.

Pilane and Operation Heritage (*Agenda Kulturarv*)

With the start in 2001 the Swedish National Heritage Board together with the County Museums Council and the County administrations carried out the project and campaign called *Agenda Kulturarv* (English: *Operation Heritage*). The aim of the project was to analyse future visions and to create an agenda in culture heritage management. A policy statement 'Putting people first' was launched in August 2004 (*Agenda Kulturarv* 2004). The project has been much debated and discussed within the heritage sector in Sweden. One of the topics that has been a priority in the debates is about which role the cultural heritage management should emphasize and a democratic and dialogical role has been highlighted as a raw model shown for example in the title of the policy statement 'Putting people first'.

The final report from *Operation Heritage* focuses on issues concerning participation, integration, dialogues, use and preservation and the key word of *Operation Heritage* turned out to be 'dialogue' (*Agenda Kulturarv* 2004). At most heritage sites in Sweden there is a one way communication through displays and in some cases information through mobile phones. If your aim is to create new and more engaging interpretations of heritage sites you need to create a fruitful dialogue together with the visitors to achieve a different kind of interpretation (Gustafsson & Karlsson 2004; Synnestvedt 2008).

The challenge of *Operation Heritage* has been realizing the results of the project visualized in the final report and in the political statement 'Putting people first'. The heritage site Pilane is to be considered as an example of realizing some visions and aims discussed in these documents.

At Pilane there is a new and engaging interpretation of the site which is the result of the initiative, hard work and financing of a private person, Peter Lennby, who took a loan on his own house to start the exhibition project that has made Pilane the



Fig. 2 Some of the graves at Pilane grave field with sculptures in the background. The sea can be glimpsed at the top left on the picture. Photo: Maria Persson.



Fig. 3 Overlooking the grave field. Do these silent people speak too loudly? Photo: Anita Synnестvedt.

extraordinary experience it is today, and not an initiative of the heritage management sphere (Larsdotter 2008:154). But, heritage management officials took part in a fruitful dialogue with this entrepreneur which made it possible to cooperate in the sculpture project. In 2009 as a result of the increasing numbers of visitors to the site new brown/white signs have been set up to make it easier for the visitors to find the site. These signs indicate that it is a heritage site of great touristic value. To be able to put up these special brown/white signs you have to follow many restrictions and regulations from the UN and EU as well as national rules (Raä, Pilane, Pilane homepage). The unique combination of ancient remains, animals and modern sculptures is considered to be the reason why this site has increased its numbers of visitors and made it necessary to put up new signs (Pilane homepage). The Pilane example in many ways realizes the intentions of the project Operation Heritage. Still, we wonder if Pilane is not one of a kind and if there really have been such great changes in perspectives in general. There is still much to discuss and much work to be done if you want to change interpretation at heritage sites from one-way communication into sites which are open for dialogue. Peter Lennby argues for the site in this way, which we think should be regarded as an example for other heritage sites (even if the ambition at other sites is not to set up sculpture exhibitions):

My ambition was not to try to beautify the site with sculptures as I have seen people trying to do at other places. It was rather to once again take the site in possession. People have lived here for thousands of years. They should wander, rest and intermingle here also today (Interview with Peter Lennby in the yearbook of the Swedish Tourist Association 2008 (Jonsson 2008: 145-146) [translated by the authors]).

A site of a unique combination of values

As claimed above, the Pilane heritage site is, since the first sculpture exhibition was set up, a great success due to the unique



Fig. 4 Homeless animals: bag lady hedgehog and garbage seeking badger, by the artist Laura Ford from the exhibition 2009. Photo: Anita Synnestvedt.

combination of nature, animals, ancient remains and modern sculptures (Pilane homepage). The selection of sculptures is one important piece in this picture and is made by Peter Lennby. Most of the sculptures at Pilane have a local as well as a global perspective, which may be one of the reasons it attracts the great interest from so many different kinds of people. There are local artists, artists from the Nordic countries, as well as artists from other parts of the world participating in the exhibitions (see Pilane homepage for further information). As well as representing different countries and cultures, the artists are at the same time individuals when it comes to the very special expressions each inhabits. Lennby has given thought and invested aspirations in his selection of each artist in every exhibition. He encourages them to consider the landscape and the ancient remains in the presentation at the site because he wants the sculptures to be complementary; to both integrate as well as to reflect (and inspire reflection on) the ancient remains and the landscape. This kind of sculptural exhibition is not to be compared with other similar exhibitions in common spaces. Here, in a more direct way, the sculptures may change people's thoughts and impressions about the heritage site. Without the ancient remains at the site, the exhibitions would not have had the same kind of impact, the sculptures would then have been more like decorations in the landscape, but together

with the ancient remains a new kind of depth and understanding is created (Synnestvedt 2008). In Sweden there are different kinds of sculpture parks which are of great value and interest, and these also have a large number of visitors, but they do not have the same kind of aim, i.e. to comment on ancient remains, and therefore such sites form a different kind of exhibition (STF 2008).

The great interest and success may also be explained through a consideration of the other values the site possesses. According to archaeologists Anne Carlie and Eva Kretz, prehistoric monuments and sites can be ascribed different kinds of values. These values are based on the qualities and character we ascribe them. Carlie and Kretz distinguish several different values that apply to prehistoric contexts (Carlie & Kretz 1997:203). These can also be used to explain the success at Pilane. First of all, we have *the scientific value* which concerns the site's ability to contribute to archaeological research in order to deepen our knowledge of the past (Carlie & Kretz 1997:210-213). Pilane is a well preserved site with different kinds of Iron Age monuments representing burial traditions from that time, and might be of great value for future excavations. Secondly, there is *the value of experience*. This value concerns the different emotions perceived when visiting a prehistoric site. This varies from person to person, but is not



Fig. 5 One of the information panels at Pilane. Photo: Anita Synnестvedt.

related to the ancient remains, but with a person's emotions, interpretation and experience, all subjective experiences (Carlie & Kretz 1997:223-226). Another archaeologist, Ann-Sophie Hygen, describes it like this:

The experience lies in the human, not in the ancient monument (Hygen 1996:51) [translated by the authors].

A strong value of experience is not necessarily connected to a high scientific value. The former is independent of archaeological knowledge and is instead related to personal attributes such as taste, interest, personality and experience of the contemplator (Carlie & Kretz 1997:224-226). We argue that Pilane has a double value of experience as we consider that the combination of the prehistoric monuments and the modern sculptures give Pilane a very strong value of experience. The third kind of value that can be applied to Pilane is the *pedagogical value*, meaning the site's capacity to visualize our understanding and our interpretation of the past. According to Carlie and Kretz a site can be pedagogical in two different ways. At first you have to consider the condition of the monuments. If they are much damaged you might regard them as having less value. Secondly, a site needs to be physically accessible in order to be pedagogical; it must be possible to visit the site and the visibility of the monuments at the site is paramount (Carlie & Kretz 1997:219-221). Pilane has a strong pedagogical value with well-preserved monuments, visible in the landscape, due to the management plan of the site. New traffic

signs and information at official websites, as well as accessible parking lots, make it easy to locate and visit Pilane. According to these conditions, the site is literally used for pedagogical reasons. Several schools on the island of Tjörn, and most of all the nearby school, have many of their lessons at the site (per. comm. C. Andersson). Pilane is a very suitable place for outdoor education, where questions about life, death, arts, nature and of course history may be discussed. The sculptures enhance the experience and make discussions even more interesting (Widegren 2010). The archaeological education at the University of Gothenburg has a long tradition making excursions to the site. Since the exhibitions started in 2007 this has also provoked lively discussions among students as to whether arts and ancient remains belong together, and if this is an appropriate way to interpret heritage sites. The students expressed different views about the site; some found the sculptures disturbing, but in general most of them were fascinated and enjoyed it (Discussions with GU students: May 2009, September 2009, May 2010 and September 2010).

The new stones are allowed to speak louder

It is the activities that give life to a heritage site and make it important and valuable for people in general. We consider it to be our aim as antiquarians to make heritage sites active meeting places where interesting discussions can take place (Synnестvedt 2005: 83-90; Synnестvedt 2008).

It is possible to distinguish different kinds of groups when they are visiting and using ancient remains. The biggest group of cultural activity consumers, except schoolchildren, seems to be the group of well-educated middleclass people, mostly consisting of women (Light & Prentice 1994:112). The question to be asked here is whether heritage activities are destined to belong to these two groups of people, or if it is possible to reach out to other groups. When it comes to heritage activities there is a need for a more varied and interesting kind of experience and interpretation. Pilane presents new and interesting interpretation potential; here modern sculptures meet with the ancient remains, and indeed other categories of visitors are also coming to experience it. It is in the meeting of these two phenomena that an innovative interpretation project is created. Peter Lennby, who is at the site nearly every day, confirms this different scenario as he tell about youngsters and families with children of different ages coming to the site and spending lots of time there (Synnestvedt 2008: 341-342).

But does the heritage management sphere recognize these new groups of visitors and the increasing number of visitors? We made an observation about the panels at the site after the fourth season of the sculpture exhibitions. The displays tell about the ancient remains and were set up in 2002. By 2011 they were in a poor condition: the text is faded, the frames without colour and the surface is destroyed, which makes it difficult and uninteresting to read. Also it is important to ask whether the text is suitable for the site today, since there are new groups and an increasing number of visitors. The intentions of the panels are primarily to tell about the monument and the location. The information in the displays at Pilane is vague and general. This is unfortunate when the panels are the only channel for information about the ancient remains that is available at Pilane, a circumstance Pilane has in common with most heritage sites (Gustafsson & Karlsson 2004:83). These panels are generally made to last over a long period of time irrespective of changes in academic perspective and general knowledge as well as changes in society generally. The panel is supposed to function in all kinds of weather; the space is limited, which makes the demands on form, material and the content exceptional. It is rare that a text on a display of approximately 20 lines catches interest and communicates to the reader (cf. Geijerstam 1998). Social differences in society as well as gender and age enable people to absorb information differently. Therefore, you will find diverging views on what is true or false, good or bad, acceptable or not (Adolfsson 1987).

We consider it an impossible task to produce management plans for heritage sites which are suitable for everybody. Regardless of time or place the information panels have a tendency to look the same. This contributes to the anonymous and impersonal impression you get when visiting many heritage sites. A panel can be in place for about 30-40 years without any change (cf. Geijerstam 1998). But even if you study recently produced panels there is a minimum of inventiveness, new approaches and alternative ways of presenting heritage sites to the public. We are trained to recognize and accept a historical panel, but in our opinion, we do think it is somewhat sad not to take advantage of all kinds of knowledge known to us today in order to develop the use of panels. For instance it is not necessary for all of the panels to be constructed according to the same model. Each landscape, place and ancient monument is unique and should therefore be given an opportunity to be presented in a unique and interesting way and which should especially come into play when it comes to a site like Pilane. More appropriate and well-kept panels and information leaflets would have made the prehistoric site Pilane

more of a focus, and both new as well as old stones would have been able to speak just as loud.

Conclusions

The landscape is given different kinds of interpretations depending on the interpreter's personal pre-requisites. There is not just one history, but many depending on who is telling it (Svensson 1998; Carman 1996; Bourdieu 1984). Therefore there are many ways to gaze into the space of the heritage site, move in this space and make an interpretation. A heritage agenda such as at Pilane attracts new groups and new people to prehistoric sites and to archaeology in general. Before the art exhibition started in 2007 the site had some 1,000 visitors per year, a number that has increased to more than 60,000 per year (Zeljko 2010). Is it fair to say that this is due to the sculpture exhibition? We argue that it is the extraordinary combination of a very interesting prehistoric site together with the art exhibition that is the explanation for the large popularity of the site. One without the other would not have met the same success in terms of visitors. A visit at Pilane provides an opportunity for reflection upon the important questions in life and for new groups of people to become acquainted with prehistoric heritage, something that corresponds with the goals of the Swedish heritage agenda. In our opinion it is necessary for the heritage management sector to have an open-minded, innovative and challenging approach in order to present successful interpretations of heritage sites. We argue that Pilane is a vital spark when it comes to heritage sites and a successful example of a daring and innovative approach to heritage management.

We would finally like to quote Kristian Kristiansen when arguing:

Landscape, monument and cultural heritage become a meeting point for separate interests. We have thus moved from striving for objectivity to a more obvious interpretation of the subjective content of meaning and importance in the valuations (Kristiansen 2001:151, author's translation).

Official information about the project Sculpture in Pilane

Sculpture in Pilane is arranged by Peter Lennby and the Pilane Heritage Society, by courtesy of the Swedish Heritage Board. Sponsored by Västra Götaland regionen kulturnämnden, Tjörns kommun, Stiftelsen för framtidens kultur (2009), Lundgrenska stiftelserna.

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FROM NUCLEAR MISSILE HANGAR TO PIGSTY: AN ARCHAEOLOGICAL PHOTO-ESSAY ON THE 1962 WORLD CRISIS

Mats Burström, Anders Gustafsson and Håkan Karlsson

Abstract: Half a century ago – in October 1962 – the world was on the threshold to the unthinkable: a full-scale nuclear war between the USA and the Soviet Union. The focus of the conflict was a number of Soviet launching sites for medium-range missiles situated in the Cuban countryside. Today, at first glance it is difficult to discover traces at these sites that testify to their important role in twentieth-century history. A closer look, however, reveals not only material remains but also an extensive, peaceful reuse of elements from the former military installations. This photo-essay presents some of the material evidence found during archaeological fieldwork at the missile site at Santa Cruz de los Pinos, also known as San Cristobal 3, situated c. 100 kilometres west of Havana.

Keywords: archaeology of the contemporary past, Cuba, material reuse, Missile Crisis, photo-essay

This photo-essay is based on archaeological fieldwork conducted within a Swedish-Cuban research project. The general idea behind the project was to look for ways of telling the story of the 1962 Missile Crisis other than the ‘big history’ that has been told over and over (cf. Burström et al. 2009). We set our minds on discovering what kind of memories remain today at the former missile sites – in the ground as well as in people’s minds – and investigating this.

The results of the project have been published in *Journal of Social Archaeology* and we refer to that paper for an overall account (Burström et al. 2009). We believe, however, that there is some truth in the old saying ‘A picture is worth a thousand words’ and we have therefore also produced a photo-book (Burström, Gustafsson & Karlsson 2011). This essay presents a pictorial account of one of the sites, Santa Cruz de los Pinos, which once could have been the beginning of the end of it all.

Concrete Evidence. This heavily reinforced bridge is found in the outskirts of Santa Cruz de los Pinos. Its dimensions are not what you would expect for a small town in the Cuban countryside. The explanation is that the bridge was modified by Soviet engineer troops in the summer of 1962 to carry the heavy weight vehicles of a missile regiment.





Local Knowledge. While the former missile sites are little-known in general, there is, of course, a lot of local knowledge. Julio Luaces Domingues, here leaning on an arch from a missile hangar, knows the locality very well indeed and he also has a lot of memories from the time when the site was functioning. For a long period of time, however, the Missile Crisis has been a part of the rarely discussed past in Cuba (Burström et al. 2009).

Extinct Species. The most easily distinguishable remains of the former missile site in Santa Cruz de los Pinos are the ruins of the demolished missile hangar. The concrete arches were produced in the Soviet Union and then transported all the way to Cuba. Now they lay helter-skelter and look like the bleached ribs of some long-extinct giant animal. It reminds us that the Soviet Union has also ceased to exist.



Keeping Watch. Time passes and today the arches from the missile hangar are reused in a variety of ways. This farmer's dog is keeping watch over a cattle fold built of two arches and concrete plates collected from the ruin nearby. In the middle of the fold, a hen, oblivious to anything but the present, is pecking at kitchen refuse.



Rust in Peace. A piece of military equipment found in a heap with scrap. Local farmers collect material that may come to good (re-)use some day. The general shortage of goods in the Cuban countryside makes people attentive to anything that can be useful.



Bridging Past and Present.

Among the most reused components from the missile site is a kind of perforated iron mat that originally was laid on the ground to improve passability. Now this mat leads over a small ditch to the entrance of a private home.



Bottoms Up! Yet another reuse of an iron mat: this time as a bottle holder outside a house. It satisfies our archaeological gaze to notice that the bottles are not randomly put in place, but sorted according to colour – green, brown, transparent.

Bricolage. The one reuse is more spectacular than the other; the inventiveness in using what there is to be found in a scarce material environment is impressive. This pigsty is almost entirely built of material collected from the missile site.



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HERITAGE FUTURES AND THE FUTURE OF HERITAGE

Cornelius Holtorf and Anders Högberg

We need to define in advance a response to the great issues of the next two decades, to define a future just as we have always presumed to create the past. Archaeology is about change and time; future time differs only from past time in its pace, and as a profession we should be able to adjust to the future, and direct it, more than most.

– Graham Fairclough, from abstract written for the session ‘Archaeology Tomorrow’ which he organized at the 1992 Institute of Field Archaeology’s Archaeology in Britain conference.

Abstract: In this paper we take stock of how cultural heritage and the future are interconnected, from a largely archaeological perspective. We indicate which future trends can be identified that heritage sector strategies will need to adjust to. We also discuss some special categories of cultural heritage that in all likelihood will be of the distant future, whether we like it or not. We review how the heritage sector has failed to give sufficient attention to future issues and argue that this short-coming should be remedied as soon as possible. We would like to draw attention to the fact that the heritage sector lacks a thorough engagement with questions concerning the future benefits of cultural heritage and thus concerning the appropriateness of present-day practices and policies in heritage management.

Keywords: Future heritage, futurology, cultural heritage, heritage management, preservation, conservation ethos, archaeological heritage, space messages, nuclear waste

Introduction

Studies of the future are timely and pertinent in order to make the best decisions in present society. They are however full of difficulties, as the future is an empirical field which does not exist (Slaughter 1996; Bell 1997; Mogensen 2006). Both pertinence and difficulties apply equally to studying the future in relation to human culture. The recent study ‘All Tomorrow’s Cultures’ by the American anthropologist Samuel Gerald Collins (2008) is an interesting account of how anthropology and anthropologists have previously, and how they might now, be embracing the future. The book contains a statement (Collins 2008: 8) that can function as a programmatic declaration concerning a suitable engagement with the future not only in anthropology but also in neighbouring disciplines including archaeology, history and heritage studies: the future lies not in peddling the anthropological [or archaeological, historical etc.] gambit of incommensurability, but in vouchsafing the possibility that ways in which we think and act may be very different in the future and in doing so, opening up a space (or a spacetime) for critical reflection on the present.

Studying the future of cultural heritage and the cultural heritage of the future is accordingly very much about acknowledging different ways of thinking and acting regarding cultural heritage in the future and, in doing so, opening up for critical reflection on cultural heritage in our own present.

Irrespective of whether we think of 5, 50, 500 or 5,000 years from now, cultural heritage of the future cannot in itself be empirically investigated and described since it is in part dependent on decisions which have not yet been made (although there are exceptions to this, as we will discuss). Studying heritage futures is about generalizing and projecting existing knowledge about cultural heritage onto prognoses and visions of what will come (see e.g. Kristiansen 1996). In this paper we will take stock of how cultural heritage and the future are interconnected and what this tells us

about the present. Although our perspective is largely, though not exclusively, archaeological, we will indicate which future trends can be identified that heritage sector strategies will need to adjust to. We will discuss some special categories of cultural heritage that in all likelihood will be of the distant future, whether we like it or not. And we will review how the heritage sector has failed to give sufficient attention to future issues and argue that this shortcoming should be remedied as soon as possible. Even if we will be critical of the prevailing conservation ethos within the heritage sector, the discussion we want to raise here is not about whether or not any one site ought to be protected and preserved. This is important to emphasize. What we do want to draw attention to and discuss is the fact that the heritage sector lacks a thorough engagement with questions concerning the future benefits of cultural heritage and thus concerning the appropriateness of present-day practices and policies in heritage management.

Cultural heritage and the future

Although the way we relate today to the cultural heritage of the past may at face value seem to have very little to do with the future, in fact there are some very profound and deep-reaching links. Archaeologist Patrick V. Kirch claimed that an archaeology of prehistoric global change investigating the effects of uncontrolled human population growth on environmental degradation ultimately leading sociopolitical crises can make a contribution ‘to the future of this planet’ (Kirch 2004: 23). As captivating as this sounds, we are somewhat sceptical that a very large portion of archaeological or indeed other heritage related research will be of that kind and able to influence human futures directly (Holtorf 2005: 6–7). We rather think that what links past and future most profoundly are the widely applied concepts of preservation and conservation.

Present-day heritage management is a futuristic activity because it is to a large extent motivated by the desire to preserve

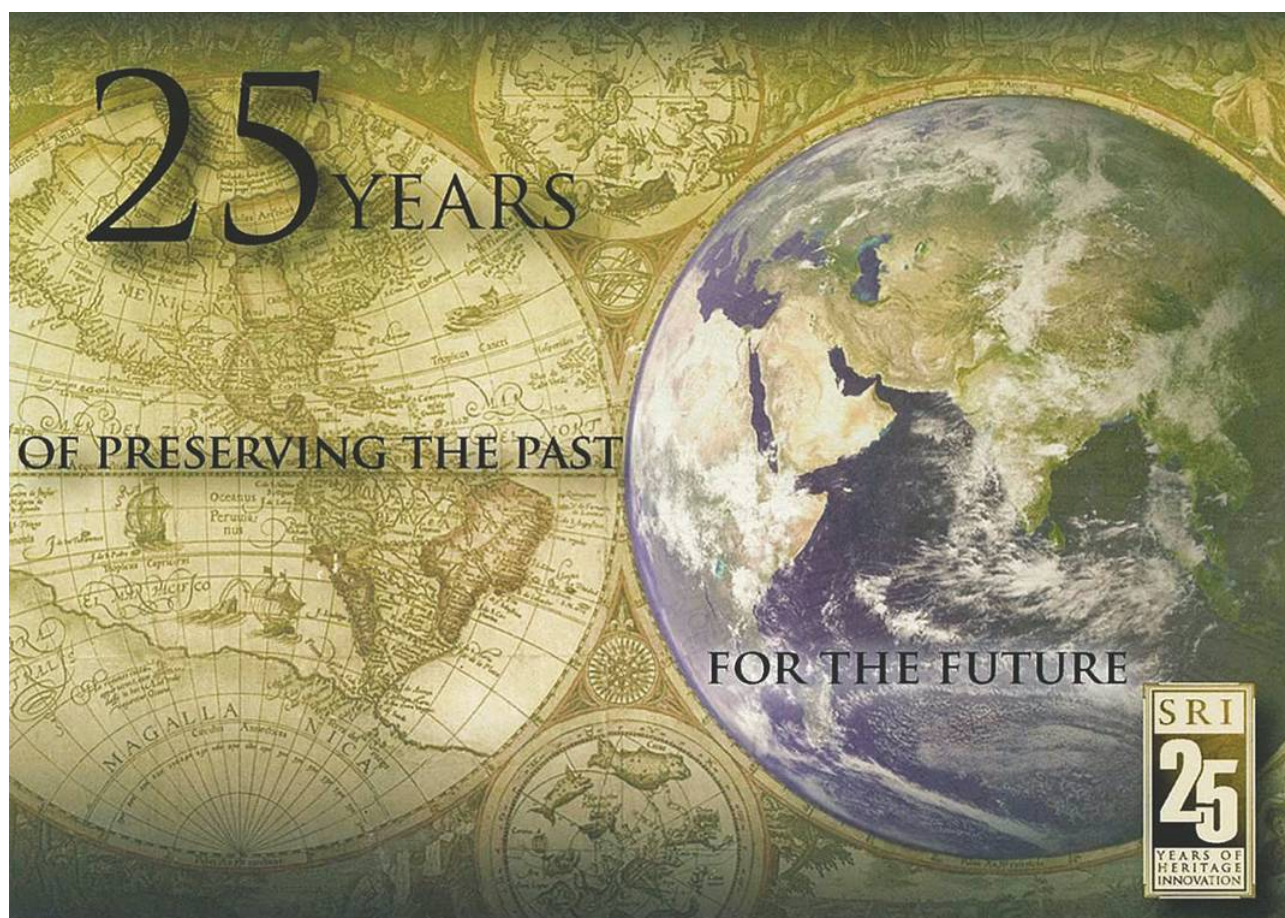


Fig. 1 *The Conservation Ethos: Preserving the Past for the Future*. Design by Andrew Saiz; image courtesy of Statistical Research, Inc.

the remains of the past for the benefit of future generations. This idea of preservation is the basic paradigm of all heritage management. It involves either the conservation of heritage in physical terms ('preservation in situ', 'stewardship'), or in case a given site or object cannot be conserved it involves recording and archiving the information it contains ('preservation by record'; 'rescue archaeology'). The underlying thinking is based on the assumption that future generations will in one way or another value what we leave for them so that we become 'good ancestors for future generations', as Neville Agnew (2006: 1) of the Getty Conservation Institute once put it (see Fig. 1). The underlying conservation ethos is dubious but seldom questioned either in the heritage sector or in Heritage Studies (but see e.g. Rüsch 2004; Holtorf & Ortman 2008). It is symptomatic that even a book like Salvador Muñoz Viñas *Contemporary Theory of Conservation* that questions much of what is taken for granted regarding the principles of conservation and conservation science fails to problematize the relationship between conservation and the future (Muñoz Viñas 2005: 194-7).

A typical way of reasoning about the future in the heritage sector is the one adopted by the American non-profit organization The Archaeological Conservancy (2012). They chose the fitting slogan 'Preserving the past ... for the future', explaining that:

Every day, prehistoric and historic archaeological sites in the

United States are lost forever--along with the precious information they contain. Modern-day looters use backhoes and bulldozers to recover artifacts for the international market. Urban development and agricultural methods such as land leveling and topsoil mining destroy ancient sites. The Conservancy protects these sites by acquiring the land on which they rest, preserving them for posterity (...). By permanently preserving important cultural sites, the Conservancy makes sure they will be available for our children and grandchildren to study and enjoy.

Another example comes from the conservation work of the Acropolis in Athens. This is how it is formulated in a publication published by the Greek Ministry of Culture (Hadziaslani 2002: 7):

These building that have survived for almost twenty-five centuries, weathering adventures, destructions and the relentless damage of time, must be preserved as historical testimonies and be handed on to future generations in the best possible condition.

A similar reasoning can frequently be found in Sweden, too. For example, all but two of the 21 heritage Departments in the County Councils (Länsstyrelser) of Sweden, feature the following information on their relevant web pages:

The County Council oversees the county's ancient monuments. It is charged with protecting, maintaining and making our ancient

monuments more accessible so that today's and tomorrow's generations can understand and enjoy the historical environment.¹

In all these examples several core values are expressed related to a conservation ethos. Archaeological heritage is said to consist of valuable, original sites of the past that are threatened by destruction and neglect in the present and therefore must be preserved for future generations to study and enjoy (see Holtorf & Ortman 2008). These archaeological examples are just a few out of many which show how a present day conservation ethos is motivated by assumed future benefits. Working as stewards championing preservation in situ professionals and amateurs in the heritage sector alike are constantly operating in a context of making assumptions and plans concerning the future.

The future is no less implicated as far as 'preservation by record' is concerned. Conserving and preserving important artefacts and preparing detailed records of information from sites that are about to fall victim to development, and subsequently maintaining those finds and records in archives and collections, is widely considered an important duty of the heritage sector for the benefit of future researchers. An investment in preserving selected past remains and carefully recording their lost context of surrounding features implies a saving in the costs of future research that can draw on these sources in further advancing human knowledge about the past (as argued e.g. by Goldhahn 2006).

Despite these tight conceptual links between cultural heritage and the future, academic literature exploring these links is scarce. There have been discussions on the social history of the concepts of both the past and the future which have first been lengthening and more recently been drastically shortening (Lowenthal 2005, 2007). There have also been studies exploring the links between heritage and cultural memory with arguably some implications for the future (e.g. Assmann 1999). But none of this has ever been connected very well to the contemporary policies and practices of heritage management specifically.

The future in context

It is not difficult to follow David Lowenthal (2005) and Eckart Rüsch (2004) who argue that the present concern for future generations in the heritage sector (as elsewhere) is neither a matter of altruistic self-sacrifice for the welfare of future human beings nor one of intergenerational equity. As the past and its remains are continuously growing every day, future generations cannot run out of past and there will always be plenty of cultural heritage to study and enjoy. It is thus easy to come to the conclusion that slogans such as 'preserving the past for the future' are catchphrases intended to project a forward-thinking image that mostly serves to give a future not to the past but rather to the slogan's origin, thus serving as a marketing tool (Spennemann 2007a: 5). Such notions may be little else than clichés 'that seem to pull at the heartstrings of the audience in order to mask its own befuddlement' (Spennemann 2007b: 92).

In fact, as Lowenthal indicated, the existing concern for the future in heritage management has been 'a matter of enriching

our own life with depth and purpose'. As mortal human beings we pursue meaningful purposes that survive ourselves (Rüsch 2004). Arguably, the widespread desire to protect and preserve heritage is nothing but one outcome of a strong human desire to obtain a sense of purpose by caring for something profound, whether that may be the ozone layer and global climate, homeless people and the fight against poverty, tigers and the protection of biodiversity or Stonehenge and other cultural heritage sites (Holtorf & Ortman 2008). It may even be said that the preservation of cultural heritage is one way to meet the longing for immortality in a secular age (Jensen 2000). As a result of such preoccupation with our own all too human needs and desires to care, and give the impression that we care, we have never asked which role we can expect heritage to play in the *actual* future which most definitely will not in its entirety resemble the present and thus require new policies and practices.

This question was also posed in several creative projects devised and carried out by the archaeologist Katty H. Wahlgren and various colleagues of hers. On several occasions members of the public in and around Stockholm were invited to select contemporary objects either to be added to the museum collections as 'future memories' or to be 'incavated' permanently in excavated holes in the ground. In each case the intention was to inspire reflections on what will happen to these objects in the future and how future generations will remember us. But the projects were also meant as provocations for the museum and heritage sector to reflect on their current practices, not the least concerning the benefits they will offer to people in the future (Wahlgren & Svanberg 2008).

Towards a futurology of heritage

Heritage specialists commonly operate with a view towards maintaining the heritage and its values for the future but they have never cared to base their work on any sound knowledge of the future they are working for. Obviously nobody can know exactly what the future will bring but the heritage sector has been reluctant even to consider what the future *might* have in stock. Given that the entire heritage discourse of our age, including its legislative base, is so frequently recurring on preservation for the future as its main *raison d'être*, it is somewhat surprising that there is no established tradition of future studies within heritage management. It is likely though that a better knowledge of the future needs and benefits of heritage would put into question some parts of the contemporary preservationist paradigm and change the way we manage cultural heritage in the present. That applies not only if we consider the long term future of several centuries or even millennia ahead. It already applies to the future that lies no more than a few decades ahead of us, i.e. the time of our own children and grandchildren.

There are some broad trends for the near future that are clearly visible already now and are almost certainly going to have consequences for the heritage sector (Steffen 2008). In the present context, the point is not to argue in detail for likelihoods of any specific processes or events to occur but rather to show that even broad trends that are not usually disputed have not yet been taken very seriously within the heritage sector. Their effects are thus likely to take the sector by surprise, which is yet another – uncertain – prediction for the future.

1. Demographic trends. Within the developed countries the population is going to age so that even if the retirement age increases somewhat, ever larger proportions of the population will be retired. This means that we can expect a growing

¹ Our translation. Swedish original: 'Länsstyrelsen är tillsynsmyndighet över länets fornlämningar. Uppdraget består i att skydda, vårda, informera om och öka tillgängligheten till våra fornlämningsmiljöer, så att både dagens och morgondagens generationer kan förstå och uppleva det historiska kulturarvet'. (See for example: <http://www.lansstyrelsen.se/sodermanland/Sv/samhallsplanering-och-kulturmiljo/arkeologi-och-fornlamningar/Pages/default.aspx>; all 21 web-pages accessed 27 August 2011.) The two exceptions are the counties of Uppsala and Stockholm.

number of people age 60+ who both might be interested in heritage and have time to invest in it (Moore 2006). We can also expect a growing number of people suffering from old-age dementia in need of care and rehabilitation. Globally, more and more people will live in Asia but also in sub-Saharan Africa, whereas areas like Europe will be home to ever smaller parts of the world population. Urban areas are growing, whereas rural areas lose ever more inhabitants around the world.

2. Environmental trends. Global climatic changes are likely to occur. Their effects will vary for different parts of the world and affect temperatures, precipitation, storms, currents, and sea-levels. All this will have consequences for population sizes, subsistence patterns, land-use, travel destinations, etc. In addition, population expansion and growing economic pressures will in some areas likewise have effects on the environment, for example through increasing erosion.
3. Economic trends. The globalized post-industrial economy with global markets and multi-national corporations is here to stay and will affect ever more world regions. At the same time it seems possible that global regulatory systems and a preference for local products will increase as well. Developing regions of the world will catch up with the already developed parts of the world and their populations will increase their living standards and gain wealth. Regional conflicts about political influence and access to globally significant resources are possible. At the same time, the developed economies will struggle to maintain the existing wealth in areas like Europe and North America, which in turn has implications not only for state and corporate budgets but for all people's behaviour, preferences and health.

Where are the think-tanks, conferences, and commissioned studies investigating possible implications of all these obvious trends of the coming few decades for the heritage sector? What are the strengths and weaknesses of the heritage sector in the light of such developments, and which new risks and opportunities are appearing on the horizon? The increasing uses of the past and cultural heritage by left- and right-wing extremists in Europe need to be monitored and controlled (Kristiansen 1993; Gustafsson & Karlsson 2011). But even more important might be to identify new possibilities for uses of cultural heritage for the benefit of society in the future. The few studies on future issues of cultural heritage that have recently been published (e.g. Moore 2006; Labadi & Long 2010; Solli 2011) are still very tentative and offer neither the depth of analysis nor the creativity in thinking that is required.

More has happened concerning some visible trends within the heritage sector itself. Although this may do little to address new situations that are emerging in the future, at least it shows which existing practices are no longer sustainable. Data stored on fragile or obsolete media including records on punch cards, magnetic tape, cassette tape, video tape, floppy discs, CDs (soon) and certain types of paper are at risk of becoming illegible and eventually lost (Figure 2). It appears that current data is increasingly in digital format and for this data to remain accessible in the future it will have to be regularly transferred from one soon obsolete medium to another newly established medium. Corresponding activities are already current practices in the heritage sector. Long recognized but not satisfactorily solved is however the problem of increasingly limited physical storage space of archives and collections. For lack of resources, many museums, but also archives, are no longer able to accession as much as they should or may want and are thus increasingly forced to store temporarily, cull and dispose. This goes hand in hand with worries that archives and collections are



Fig. 2 When we first started using computers during the early 1980s the data was stored on cassette tapes like this – now ancient artefacts. Asportatio acroamatis (dark) 2009 (concrete), from the series 'Modern Fossils' by Christopher A. Locke. Photograph by Christopher A. Locke, reproduced with permission.

not engaging sufficient numbers of people and that their usability for the future needs to be improved somehow (Wilkinson 2005; Harrison 2012).

It might not be too long before the very ideas of heritage and conservation may turn out to be nothing but temporary fads of the nineteenth to twenty-first centuries. By then, somewhat ironically, heritage sites and related objects may themselves have become a valuable and possibly threatened part of the cultural heritage... (Holtorf & Ortman 2008; Holtorf 2012). Future archaeologists, perhaps looking for explanations to the excessive desire to conserve in our age, will be able to draw on a rich material record of reconstructed buildings, restored artefacts, and archived reports (Fairclough 2009). Quite possibly, future generations will appreciate conserved buildings and sites not so much because it allows them to remember the past – when the structures were built – but because it allows them to remember remembering the past – when the structures were 'rescued' and conserved.

Cultural heritage for the future

A palpable heritage we unavoidably will pass on to the future is radioactive nuclear waste. The invention of nuclear power and nuclear power plants made it possible to produce large amounts of electricity to power homes, factories, trains, street lighting etc. But, nuclear power also produces radioactive waste which, if not handled properly, is deadly to us as well as to future generations. It is estimated that it will take 100,000 years or more for the waste to break down and not be radioactive anymore and consequently not dangerous to humans. Therefore final disposal of the spent nuclear fuel is planned for carefully. In Sweden it will be buried several hundreds of metres below ground in the parent rock of granite. But, once the waste is buried we are faced with the need to communicate the danger of building, digging and exploring at this location over very long time periods in the future. How can we create a future heritage that for 100,000 years or more maintains knowledge about that risk? The task to preserve concrete



Fig. 3 This image was designed by Jon Lomberg and photographed by Simon Bell in order to be sent into outer space. As Lomberg explained (2007), among the people shown you find all the major groups of our species. Their postures indicate the range of human movement, their ages the human lifespan, their clothes a sample of how we dress on earth (when it is warm at least). A baby nurses at its mother's breast, whereas other children and adults are clustered around the eldest, who is telling a story, the story of the small object in her hand, which is the diamond wafer on which the photo is inscribed. In the background of the Hawaiian scenery a couple walks hand in hand and a sailor prepares to launch a canoe on a voyage, as so many mariners have done throughout human history. Photograph by Simon Bell, reproduced with permission (simonbellphotography.com).

knowledge into the distant future is at the same time necessary and impossible (Benford 1999: part 1).

Another heritage of the future consists of messages and bold technological statements about Earth sent into outer space. This is a heritage which will travel for hundreds and thousands of years in space, and perhaps, eventually be found by some sort of intelligence – something that thrills many and scares some. Ever since the Pioneer 10 and 11 spacecrafts were sent into space in 1972/3, the second half of the twentieth century has seen several technically advanced messages about humanity being shot into space. The image in Figure 3 was designed by Jon Lomberg and photographed by Simon Bell in order to be sent on board the NASA space orbiter Cassini. Cassini left earth in 1997 and is destined eventually to remain on Saturn's moon Titan. The image was intended to communicate human life on Earth (Benford 1999: part 2; Lomberg 2007).

Even though the purpose of the majority of the initiatives of communication sent into space has been a sincere wish to find ways to communicate life on earth to extraterrestrial life forms, what these messages so far have done best is transmit ideas about being human – and more specifically being American? – on late twentieth-century Earth to other human beings on that same planet. The highly advanced natural science based messages

engraved on the two plaques which were on board the Pioneer 10 and Pioneer 11 spacecrafts together with the engravings and recordings on The Voyager Golden Records onboard the two Voyager spacecrafts sent to outer space in 1977 (Sagan 1978) say much about the people who sent them: they are portrayed as a species living in a highly developed society based mostly on natural science and technological advances. The messages on the disc designed for the Cassini rocket are different, portraying humans as a social, friendly and loving species living in a nice cozy environment, an environment not too different from the stories we find in present-day travel magazines. Intriguingly, none of the messages designed for communicating life on earth to extraterrestrial beings tell stories of poverty, hatred, abuse, homicide, war, genocide or other unpleasantities that the species *Homo sapiens sapiens* has accomplished during 200,000 years of evolution. As it turned out, Cassini eventually left without the disc containing the image. Disagreements concerning copyright and corporate sponsorship made NASA drop the project in the final hour. In fact, personal, social and ethical conflicts may reveal more about human civilization on earth than the image ever could have done. In that sense the project succeeded after all (Benford 1999: 128-34; Lomberg 2007).

Outer space communication also highlights our present-day concepts of time and space which are so important in archaeology

too. Aside from spacecraft and their messages, this becomes evident in radio messages beamed into the Universe. For example, the so-called Arecibo message was broadcast into space in 1974 from the Arecibo radio telescope, aimed at the globular star cluster M13 some 25,000 light years away. This means that it will take 25,000 years for the message to reach its intended destination of stars (Sagan 1978). If we imagine that some intelligent life form somewhere in that cluster of stars is able to detect the message, and will be able to answer it, people on Earth would eventually receive a message, providing an answer to a message sent by people who have been dead for at least 50,000 years. It is as if we today would get an answer to a message sent by somebody living in the later part of what we today call Mousterian culture.

In addition to such messages there are also unintentional clues of human civilization perceptible in outer space. An enormous flow of radio waves from communication, radio and television broadcasting on Earth is sent into space too. These radio waves constitute a perfect 'time-machine' for those able to detect and interpret them, from the earliest broadcasting of a human voice at the beginning of the twentieth century to the thousands of television channels broadcast today around the clock and constantly increasing amounts of traffic on the internet such as facebook updates... Will all these murmurs of Earth eventually turn out to be an asset or a burden for future generations? Are we ready to respond adequately to any response we might in our time receive from space?

Having considered heritage futures and the future of heritage in various theoretical and hypothetical ways, we now need to consider the specific lessons to be learned for contemporary policies and practices related to cultural heritage.

Considering the future of heritage in the practice of heritage

Future studies are strategic and often consist of prognoses and visions. Prognoses are expressed in future scenarios and focus on what contemporary society considers to be important issues, for example climate change, ecological crises, globalization, migration, individualization, poverty, eradication of preventable diseases, provision of drinking water, etc. Visions are often built around key words such as sustainability, participation, diversity and economic growth. But how these visions are to be translated into policies and practices that bring about prosperous futures in which we would want to live in, given predicted future scenarios, often remains vague.

Although, as we discussed earlier, there are very few prognoses and future scenarios relating to cultural heritage, visions associated with keywords like sustainable development are important in strategy documents, charters and conventions of the heritage sector too (for Sweden see National Heritage Board 2007). But how they are to be translated into policies and practices of heritage management for the benefit of future generations is often unclear. One of the reasons for this weakness, and a consequence of the lack of concrete scenarios, is an ill-defined idea of the future. For example, the Swedish 2009 government bill outlining future cultural policy (Kulturpropositionen 2009/10:3) contains the statement that 'one of the government's priorities in cultural policy is to protect the cultural heritage for the future'²(2). This seems to be a reasonable and unproblematic ambition. But if we take a closer look at what is actually stated, a few critical questions

can be asked. Is the government planning for 5, 50, 500 or 5,000 years ahead? Precisely which benefits does the government expect preserved cultural heritage will offer to future generations who are also likely to live in very different conditions? Given that it is impossible to know if future generations will appreciate our cultural heritage, how much can we reasonably be expected to sacrifice for that nebulous possibility?

Dirk Spennemann (2007b) is one of the few heritage experts who cares enough about the future to consider possible scenarios of future heritage. He knows (Spennemann 2007b: 98) that as powerful a tool futurist rhetoric can be to shape public opinion, 'it can also be a double-edged sword which can cause harm to the cause of historic preservation if the rhetoric is not backed by action that is informed by futurist methodology'. Classifying the majority of historic preservation professionals as 'future avoiders', Spennemann (2007c) himself pointed to two classes of heritage objects that are likely to gain significance in the future. One is pongid heritage, i.e. artefacts used and in some cases created by the great apes whom many already today concede that they possess material culture. The other category of heritage Spennemann (2007c: 869) expects consists of the heritage created by robots: 'The question that heritage managers need to consider is whether they wish to stand accused by future generations that they let slip by the opportunity to collect robotid artefacts and intermediate milestone artefacts while we had the chance'. Moreover, he argued that we can expect that sentient future robots will claim the right to determine the fate of their own heritage (Spennemann 2007c: 871). But arguably this line of reasoning is itself little else than a projection of present-day thinking onto the future...

Would we benefit ourselves if we had more preserved cultural heritage? It is evident in contemporary society that a period of the past with relatively few preserved archaeological remains such as the oldest Stone Age can nevertheless play an important role in historical consciousness. The few pieces of material culture belonging to early modern humans living in present-day South Africa some 80,000 years ago suffice to play a vital role in contemporary culture, evoking existential questions on what it means to be human (Henshilwood & Marean 2003). Who says that future generations might not be best served by a very patchy record of ancient remains surviving our age since that would more than adequately reflect current economic pressures on the land and cultural preferences for re-invented pasts?

The heritage sector has long been protecting, preserving and conserving cultural heritage for the future without worrying much about what that future will actually be like. This is a peculiar paradox. The heritage sector needs to take a more futuristic view in defining its goals and practices. As archaeologist Graham Fairclough (cited at the very beginning of this text) suggested already back in 1992: 'We need to define in advance a response to the great issues of the next two decades, to define a future just as we have always presumed to create the past'. Two decades later, this call has still not been heeded. More recently, Dirk Spennemann (2007a: 13) made a similar point in arguing that it is not good enough when the past (and heritage) are deemed valuable for their own sake for all times, thus avoiding any serious engagement with the future that will inevitably involve change. The question to be addressed instead is which future we would like to assist shaping in order to make the world a better place, by drawing on the past and cultural heritage as strategic resources.

² Our translation. Swedish original: 'en av regeringens kulturpolitiska prioriteringar är att värna kulturarvet för framtiden'.

Conclusions

The *modus operandi* of the civil service in democratic societies is a vital question for the future. We need to know how society should manage its heritage so that it contributes to a more equal, more integrated and more sustainable society. This requires knowledge: historical knowledge about the history and growth of heritage management and its practices and policies; knowledge on how state heritage management operates in our present; and knowledge about the future effects of current heritage management and what they will mean for future generations. Hence, research on the cultural heritage of the future requires three different approaches: historical studies, studies of the present and future studies. The two former are well established within heritage studies (e.g. Kristiansen 1993, 1996). Future studies within the heritage sector are however virtually unexplored. This reasoning leads to a number of research questions that we consider as vital for future studies within the context of heritage studies and heritage management:

What can we know about any specific future and which risks and opportunities does this future imply for the cultural heritage sector in the future? Can these risks and opportunities be influenced by policies and practices adopted by the heritage sector in the present?

Given that the only thing we know for sure about the future is that it will be different from the present, which assumptions about future generations should not be made by the heritage sector in the present?

Which responsibilities do we have towards future generations in the light of the responsibilities we have towards the living generation? Can we reasonably expect certain things of future generations? Which futures are we talking about anyway?

Are we (and the heritage sector) assisting in shaping the future or are certain conceptions of the future shaping us (and the heritage sector in its present manifestation)?

The main aim of our discussion has not been to criticize present thinking and policies but to demonstrate the extent to which the heritage sector's entire philosophy is caught up in its own present, despite – or rather because – of rhetorics suggesting otherwise. We believe that open-minded explorations of heritage futures and the future of heritage would be beneficial for the effectiveness of much of the work in the heritage sector. This requires not only a clear view of which futures the heritage sector is working for concerning any specific activity it carries out but also the development and application of concrete scenarios of specific futures. We believe that strategies resulting from such practices would maximize the benefits cultural heritage will have for future generations on planet Earth.

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A HERITAGE OF CONFLICT, AND CONFLICTS OF HERITAGE

John Carman

Abstract: This chapter will seek to unite two of Kristian Kristiansen's archaeological interests: the preservation of archaeological remains as 'heritage'; and the study of conflict in the past. Taking as a starting point my own joint and paradoxical interests in studying war in the past and the preservation of ancient remains in the present, I will take a somewhat 'sideways' view of the role of the processes of ruination and abandonment in the study of the past through its material remains. In identifying both the destruction of the past in the past and its creation in the present as cultural activities, I will seek to make links with others' ideas about how apparent destruction represents transformation rather than negation. It does not follow that the volume's dedicatee will necessarily agree with anything said in the paper, but I hope his influence will be very clear!

Keywords: destruction, construction, heritage, context, value, conflict, battlefield, disciplinary identity

Introduction

The nineteenth-century anarchist Michael Bakunin once commented that 'the urge to destroy is also a creative urge' (quoted in Woodcock 1975: 139). This was not a call for nihilism but instead a call for people to take responsibility for the society they live in. By tearing down existing political and social structures the opportunity is created to reconstruct them in a new way: and for the anarchist that urge to destruction must be permanent and ongoing in order to avoid the ossification and reification of new structures of power and authority. For the anarchist, a society in constant insurrection against itself is the ideal social form, for out of the destruction of the present comes the creation of the future.

Archaeology too creates out of destruction, since (as we all know) 'excavation is destruction' (Wheeler 1954: 15). But out of that destruction of the material traces of the past comes our capacity to analyse and understand what they may have represented in that past. Although Bakunin and his followers had no need of a past archaeological or otherwise – since a reliance on the past for models of how to live constrains the imagination – maybe we archaeologists should nevertheless adopt his mantra: out of our destruction we also create, so our urge to destroy the object of our attention is in fact a creative urge.

I share two academic interests in particular with the dedicatee of this volume: understanding the role of past remains in the present, especially as various aspects of 'heritage' (e.g. Kristiansen 1989, 1996, 2008, 2009, 2012); and the study of past, especially prehistoric, conflict (e.g. Kristiansen 1999a, 1999b, 2002). They are combined in this contribution to allow me to muse on the nature of 'destruction' and its associations with creation in archaeology.

War: Destruction and Creation

In the opening paragraph of his edited volume on the material culture of World War One, Nicholas Saunders has written:

There is nothing like shocking and bloody violence to change our view of the material world, whether in the trenches of the [First World War] Western Front, among the ruins of Hiroshima, or the vacant space of Ground Zero [in New York]. In such places there is a terrible presence of absence – not the dead bodies of

pre-twentieth-century conflicts, but human beings vaporised into nothingness by technology, a community of the 'missing' in our midst (Saunders 2004a: 1).

The idea of 'a community of the "missing" in our midst' may provide a telling and apt description of what archaeologists deal with all the time.

Bruwaan Farm forms part of the battlefield of Oudenaarde in Belgium, where in 1708 a British and Dutch army defeated a larger French force. A low mound (Fig. 1) is all that remains of the medieval castle that once stood here and the stone ruins of which served as the command post for the allied commander on that day. The objects we encounter as archaeologists always represent things that are gone and lost: things that have been – one way or another – destroyed. At Oudenaarde, an act of destruction – a battle – is no longer remembered except as an event that once happened: the objects that were present during that act of mass destruction have themselves now suffered an act of destruction. Our task as archaeologists is to overcome that loss in an effort to recreate a representation in words and images of what once was there.

Wars do more than destroy, however: as if signing up to Bakunin's call to perpetual insurrection, they also create. As Saunders notes in relation to the First World War Western Front, new landscapes were created by the war, the distinction between human beings and made objects was elided by the capacity of both to be broken into irregular pieces, and new understandings of the world were produced, leading to a great outpouring of post-war literature (Saunders 2004b: 8-10).

What often also goes unmentioned is that the Great War also created new archaeologies, because of the loss of large numbers of archaeologists trained in the late nineteenth-century tradition of Darwinian evolution (Trigger 1989: 199). A new sense of what archaeology was for emerged – building upon nineteenth-century models of social progress and citizen welfare but applying them now to the rebuilding of nation states (Carman 1993: 43-47). Out of World War One also came new techniques of archaeological prospection deriving from military reconnaissance practices (Trigger 1989: 249) and new techniques of excavation from archaeologists drawing on their experience with the military (Trigger 1989: 199).



Fig 1 Bruwaan farm and its castle mound, Belgium.

Archaeology: Destruction and Creation

Elsewhere (Carman 1990, 1996, 2002: 167-170) I have outlined how Thompson's (1979) *Rubbish Theory* relates to the trajectory of archaeological material as discussed by Schiffer (1972). This is the transition from Thompson's categories of ancient remains from invisible *rubbish* to highly visible and valued *durable*, which translates into the movement from archaeological deposit to something we can call 'heritage'.

Central to Thompson's model of how our apprehension of an object moves from one category to another is a focus upon 'world view'. Whether an object falls within the *transient*, *durable* or *rubbish* categories as defined by him depends not upon their physical attributes but upon how we perceive and understand them, and what purposes they may serve for us. It follows that what is rubbish for me may not be for you, and what is highly valued by you may be rubbish for me: you may choose to destroy what I value, and *vice versa*. But this does not mean such things remain fixed: the fact that we can differ in our view and recognise that difference, and that we are capable of seeing things in new ways so that what was once seen as rubbish may re-emerge in our consciousness as an object of value, can also work to change our world view. For Thompson and for *Rubbish Theory* nothing is fixed and everything can change.

The emergence over the past two decades of an archaeological concern with the material remains of war and conflict is an example of this world-view changing, *Rubbish Theory* process, although perhaps few in the field recognise it as such and even fewer may be bothered to attempt to model it: for most of us involved in archaeologies of warfare, it is the end result that counts not the means of getting there. The end result that matters is very often establishing the legitimacy of that research interest and the material that is the object of that research.

The emergence of a concern for twentieth-century military remains is a nice example of the *Rubbish Theory* process, not

least because it matches Thompson's own understanding of it rather better than more traditional archaeological applications of the theory. In the formulation as outlined in my own work, the 'rubbish' part of an object's life-cycle coincides with its physical disappearance from view as a buried object or feature, requiring some kind of archaeological methodology (prospection or excavation) to reveal it (Carman 1990). But from Thompson's (1979) point of view, the rubbish phase does not require a physical disappearance by ruination or burial: merely that it is *deemed* not to be present and therefore *culturally* invisible. John Schofield (2005: 88) cites the example of the Torbay Slipways, which were embarkation points for American troops for the invasion of Europe in early June 1944. These were surviving and quite robust structures discovered – or rediscovered – during a survey of such sites carried out by English Heritage (Schofield 2001). They still existed as monumental structures, and were indeed still in use for their original purpose (which was launching boats), but had not been generally recognised as important survivals from World War II: Normandy veterans, local enthusiasts and latterly English Heritage officials saw them as such, but it took the additional step of formal recording and action to preserve them legally to bring about a wider recognition of their importance. Culturally they were invisible – at least as part of our wartime heritage, useful but insignificant and therefore *rubbish* in Thompson's terms. The process of recognition and official action to preserve moved them out of the rubbish category into that of the *durable*, where the heritage resides.

Similar processes are taking place in relation to other categories of place. The category of 'historic battlefield' is one that has emerged over the past few years. It is a well-established category of heritage place in some parts of the world – such as the USA, where many are preserved under various designations (Carman & Carman 2006: 29-30), Canada and South Africa, for instance – and in other places where they are marked especially as cemeteries, particularly sites of twentieth-century conflict. In others (at least until recently, as at Aljubarotta in Portugal; Fig. 2) they remain unnoticed. Work at the Little Bighorn in the USA (Scott et al.



Fig 2 Aljubarotta battlefield, Portugal.

1989) put such places firmly on the archaeological map, and work in England at Towton (Fiorato et al. 2000) and Naseby (Foard 1995) has served to raise their profile as archaeological sites here as well. The consequence has been a series of new research projects at various places – Edgehill (Foard 2005), Bosworth, and Culloden (Pollard 2007) in the UK, Oudenaarde in Belgium (Fig. 1; Lachaert 2008), Landskrona in Sweden (Knarrström 2006), Almenar in Spain (Rubio 2008), among others – leading to new developments and understandings, and the rediscovery of sites previously uncertain, such as the battlefield at Fulford, the first of the three English battles of 1066 (Jones 2011). Once again, the combination of enthusiasts and researchers encouraged a measure of official recognition and conflict archaeology is now gaining adherents and recognition as a legitimate branch of the wider discipline of archaeology. Battlefields themselves are increasingly identified as sites of historic significance worthy of preservation (Carman 2012).

This does not, however, mean that all conflict archaeologists see eye to eye, and the field is subject to a number of divisions. In particular, it is divided by period so that, with some rare exceptions, students of prehistoric conflict rarely engage with the work of those working in later periods; students of historic battlefield archaeology (e.g. papers in Freeman & Pollard 2001, Scott et al. 2007) rarely seek inspiration from prehistorians or those who study twentieth-century conflict; and students of twentieth-century conflict engage neither with prehistorians nor with those studying pre-twentieth-century battlefields. These period concerns are further separated by the research agendas of each, which derive from and are influenced by different disciplines: prehistory in general by anthropological understandings of conflict (Otto et al. 2006), pre-twentieth-century battlefield archaeology by military history (Foard 2006), and twentieth-century conflict archaeology by CRM issues (Schofield 2005). This is a clash of world-views within archaeology itself, and the outcome for developing unified conflict archaeology is a matter for the future (Carman 2012).

Archaeologists at War: Destruction and Creation

Where conflict archaeologists most often find common cause is over the issue of amateur collectors and metal detectorists, who are granted (or simply acquire) access to sites to remove any artefacts they can find. While the legality of metal detector use and private collection varies from territory to territory, the policing can be difficult anywhere. In the UK and USA, for instance, there is no ban on such activity and except in the case of sites specifically protected by law, landowners can grant access to anyone for any purpose. By contrast, in countries such as Belgium or Sweden, where there are limitations placed on such activity by law, metal detectorists and private collectors operate nevertheless (W. Derde and B. Knarrström pers. comm. 2nd November 2011, Brussels)¹.

This has consequences for the archaeology of the site, which relies upon the detailed survey of material scatters and concentrations which are then used to trace the events of the fight or (in the case of medieval battles) locate the burial pits of the dead. As I have suggested elsewhere (Carman 2004), from an archaeological perspective, metal detectorists, pot-hunters and treasure hunters do not do ‘good’ archaeology: they do not carry out prior survey, they do not record stratigraphy, they do not retrieve all classes of data, and they do not publish results. But from their point of view, they may do very good excavation: they find and retrieve only what is relevant to them, leaving the rest for others; they may do minimal damage from their perspective, leaving only small holes in the site which they may also immediately refill; and they do not impede development or other work by their small-scale and possibly clandestine presence. By contrast, archaeological teams may clear large amounts of soil, do not allow others access, and large numbers of people may occupy the site for a considerable time. The threat of metal detectorists is of course part of a wider problem, and it too is a clash of world-views.

¹ William Derde of the Ename Center for Heritage Interpretation and Public Archaeology, Oudenaarde, Belgium. And Bo Knarrström, previously of the Swedish National Heritage Board and now an independent consultant).

This is one of those issues on which the wider archaeological community is itself somewhat divided. On the one side are those who perceive metal detecting and any other manifestation of the private collection of archaeological material as a threat to the common heritage of humanity that should be eradicated (e.g. Renfrew 2000). On the other are those who see metal detectorists as potential allies in researching the past (Thomas 2012): so long as they record their finds with a relevant archive or are prepared to work with archaeologists in investigating sites, bringing their own expertise in equipment-handling and artefact recognition to bear, then their efforts are seen as valuable and supportable. Such support is however highly conditional upon the 'proper' behaviour of the collectors concerned, which is something every archaeologist would subscribe to in the absence of a total ban. Essentially, it is an application of the principle enshrined elsewhere (e.g. DoE 1990) that 'the polluter pays' – the polluter in this instance being someone who damages the archaeological record, and the payment being in the form of the effort to adequately record their finds.

That such activities are destructive is not at issue but what is at issue is what this destruction can create. According to some, it creates additional knowledge of the past, or at least of the archaeological record (e.g. MLA 2005). But out of this destruction something else is created: that in presenting themselves as antithetical to archaeology by challenging the exclusive rights of archaeologists to access the material past, metal detectorists, pot hunters and treasure hunters assist in the creation of a discipline of archaeology. It is because we have these others – and along with them we have proponents of 'alternative' or 'fringe' archaeologies such as seekers after Atlantis, Druids, and Da Vinci Code breakers (Schadla Hall 2004; Holtorf 2005a) – that we are able to define ourselves specifically as archaeologists who do not behave as these others do. In other words, out of the destruction to our object of enquiry wrought by non-archaeologists is created the discipline and community of archaeology itself.

A focus by archaeologists on 'preservation' of material sets up an unnecessary dichotomy of preservation versus destruction (e.g. Lucas 2001; Meskell 2002; Holtorf 2005b). However, we rely on the destruction and removal of objects from the past to do our job in the present, otherwise there would be nothing for us to investigate, record or excavate. But as Gavin Lucas (2001: 40) puts it, 'in excavating a site or feature, we do not annihilate matter, it does not vaporize or disappear – it is merely displaced... rather than destroying that which we wish to understand, we alter it'. Accordingly, he argues that rather than a concern with preservation, we should be concerned with how we may wish the site to appear after our intervention, opening up two possibilities. The first is a disciplinary focus specifically upon the activities of archaeologists rather than the material with which we deal: this entails a consideration of what we do when doing archaeology, and what it is that archaeologists make; it also leads us, among other directions, into the territory of so-called 'ethnographies of archaeological practice' (Edgeworth 2006) which look at the processes of archaeology as a set of practices in the modern context. The second possibility is a closer relationship between archaeologists and others concerned for the location of archaeological work: whether these are Indigenous peoples attempting to prevent incursion on their sacred sites, or developers attempting to build something useful for the modern age, they and the archaeologists are equally concerned to create 'a place' with meaningful associations for people (Lucas 2001: 41) albeit in different ways.

In looking at acts of modern-day iconoclasm, Cornelius Holtorf (2005b: 231) points out that 'no age as our own age has to the same extent been transforming the surface of the earth and, at the same time, been valuing and seeking to conserve so many remains of the past'. It is a truism that the justification for preservationist activities since the nineteenth century has been the increasing rate of loss of old things under the tide of modernity: but in general the paradox of this is lost on the cultural resource and archaeological heritage community. What is also generally not noted is that the destruction of one thing is usually at the service of the preservation of another, whether it be: an ideal of community which is challenged by the presence of a disjunctive element or the suggestion of an alternative lifeway; one particular highly valued object over another less valued; an amenity versus an inconvenience; or people over things.

Always before we cry out against the deliberate destruction of a cultural object we need to ask what it is that is being preserved or created by that destruction: the answer may not be obvious but will always be evident and needs to be sought. By asking such questions we not only come to a deeper understanding of the nature of the heritage phenomenon but also of the processes at work in creating and marking that heritage, and especially those that may be different from our own and which value things that are different from the things we value.

Conclusions: (Re)Creating Destruction

As so often in archaeology, this paper has been an exercise in destruction. In particular, it has sought to undo any assumptions that 'destruction' is an entirely negative activity – a universal 'bad' – and to break down the dichotomy of 'destruction' and 'creation'. Instead, at least for archaeology, I have wanted to open up the possibility of seeing acts of destruction and creation – as Bakunin did – as inextricably linked and mutually implicated. When we destroy we also inevitably create. The question always is not:

- how do we prevent destruction?

but

- what cause does destruction serve?
- what is thereby created?

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WRAPPING UP

FEMALE CLOTHING AND JEWELLERY IN THE NORDIC BRONZE AGE

Kristian Kristiansen

Preface

As a relatively new Ph.D. student (in 2000) I attended a two-day seminar in Tanum. At the dinner after the first day Kristian and I had an interesting conversation about the female costume in the Bronze Age. Kristian confided that he had once worked on the topic, but could not get it published, so he turned to swords instead - and never looked back. He promised to send me a copy of his unpublished manuscript from 1975, which he claimed was his only unpublished manuscript. Our conversation stuck in my mind and was a comfort to me when work on my Ph.D. was tough. It was also a comfort to know that there was at least one other person out there who found the topic of clothing interesting. Our conversation ultimately led to Kristian taking over the supervision of my Ph.D. when my first supervisor took early retirement due to poor health. Somewhat ironically, his story came back to haunt me later, when it was indicated that my work was 'too narrow in scope' due to having a gender theoretical framework; I immediately decided to 'do a Kristian' and sat down to write an article on swords! As plans for this *Festschrift* began to take shape my first thought was to see Kristian's only unpublished manuscript published. The idea was discussed with Lotte Hedeager, and we agreed that I should translate it so it could be published alongside the other articles in the *Festschrift* as a surprise for Kristian. The resulting translation also benefitted from the help of Marie Louise Stig Sørensen and Helle Vandkilde, who assisted with some of the language problems and references. However, it was not possible to resolve all of the details without asking Kristian and spoiling the surprise, so naturally there are some irregularities in the references, nor was it possible to trace all of the original illustrations. Translation is always an interpretation, so the following is very much a product of my own understanding of Kristian's original text, and any departure from the original is my fault alone. I very much hope it is recognizable, though, and that it pleases Kristian to become reacquainted with this old friend. Kristian, I hope you will not find that the text misrepresents your original ideas, and with this I would like to thank you for your enthusiastic encouragement with my own Ph.D. research, which made all the difference. Congratulations and a very Happy Birthday to you!

Sophie Bergerbrant

Introduction

This article deals with dress and jewellery in the Bronze Age. Its main hypothesis is that these two elements make a whole, and together can be defined as a costume. Ritual clothing and ritual dress attire are not included in this study. To shed light on this the article first examines the use of jewellery before considering how the jewellery related to the dress. In order to do this a definition of the female costume will first be formulated, and this is followed by a reconstruction.

Use of Jewellery

Introduction

In both the Early Bronze Age (1700-1100 BC) and the Late Bronze Age (1100-500 BC), in graves and hoards, there were certain recurring combinations of female jewellery, which created special jewellery sets. The richest among these contained a belt-plate in addition to other jewellery. From Period II to Period V – a time-span of c. 800 years - such belt sets, supplemented with neck-collar-ring, arm-rings /arm-spirals and a fibula (Broholm 1940, fig. 14; Kristiansen 1974, fig. 13), were common in high status burials. This type of jewellery set exists outside the Nordic region as well. In the Early Bronze Age it was found in southern Scandinavia and Schleswig-Holstein, and from Period III in Mecklenburg as well, and in the Late Bronze Age it also occurs in the area around the river Oder (Montelius 1885, distribution map). This combination will therefore be chosen as a starting point for general descriptions

of the jewellery tradition, as it is the most common jewellery form in the Bronze Age.¹

The aim in the following section is to reconstruct how the jewellery was worn. This is based in part on the find contexts and also on the evidence of use-wear, which can be observed from use over an extended period. The latter method observes how the bronze surface has been worn down over time. The punched ornamentation has vanished or been reduced, and the trim around the edges appears rounded and worn. The wear can be registered in two dimensions: horizontal (distribution of wear) and vertical (intensity of wear). It can further be seen that there are certain rules for the relationship between the distribution of wear and the intensity of it. To a certain degree the extent of horizontal wear correlates with the grade of wear. One can see that there is a standard permanent way of wearing the jewellery in the Nordic region, and this is seen in the fact that the individual jewellery types bear characteristic wear-patterns that recur with some regularity.

In the following the use-wear pattern for the different jewellery types will be presented and illustrated. Only well-preserved bronze artefacts are included in this study, as this analysis demands that the original surface of an object is preserved.²

¹ An analysis of regional and chronological developments of different combinations of jewellery falls outside the framework of this article. The possibilities provided by these kinds of analyses can be found in Kunder (1973) and Wels-Weyrauch (1975).

² Problems with registration regarding the preservation condition of the bronze objects have been discussed with the conservation department at the National Museum in Copenhagen.

The individual jewellery shapes

Early Bronze Age (Periods II-III)

The most common jewellery forms and types³ are described and depicted by Müller (1891) and Broholm (1952); for the Swedish material see Montelius (1917) and for North Germany see Beltz (1910) or Splieth (1900). The way that the jewellery has been worn can be seen from the hundreds of mound burials, where the deceased were buried dressed in their clothing and jewellery (Boye 1896; Broholm & Hald 1940). Fig. 1 depicts a female burial from Ølby on Zealand, where the placement of the jewellery illustrates the way it was worn. Almost all organic material has vanished, but the corded skirts are indicated by two rows of thin bronze tubes, which have been used as a decoration on the cords and were placed at the front of the skirt (cf. Thomsen 1929, fig. 22). A more detailed description of the different jewellery forms follows.

Belt-plate

The belt-plate is probably the most characteristic and distinctive jewellery from the Early Bronze Age.⁴ In older publications they were seen as shield bosses (Worsaae 1859 nr. 205) and later, following more careful excavations and documentation 1878-81 by Sehested (1884: 50-52) and Müller (Fig. 1), it became clear that the objects were a form of belt jewellery. In 1876 Müller was already able to separate the male burials from the female (Müller 1876: 282ff; Bahnson 1886); he was aided by the well-preserved textiles that were found together with a female skeleton in Borum Eshøj in 1871. This burial contained a belt-plate and many other jewellery forms (Boye 1896, pls. 11-12).

During Period II the belt-plate had a round and slightly arched form with a protruding point of varying length in the centre. In order to reduce the wear and tear on the clothing the edges were slightly bowed outwards. The front is decorated with spiral ornamentation, which is spaced variously, from 5-6 cm to over 20 cm, in different zones depending on the diameter. Under the protruding point on the unpolished backside there is a small and thick, often moulded on, eye with a diameter of c. ½ cm through which the belt had been pulled. When remains of it have been found this has been a thin leather cord. The long woven belt with tassels, which we know from Egtved and Borum Eshøj, only functioned as a covering ornamental band and did not have a practical function. Tied with casual elegance over the hip, the long flaps with tassels at the ends hung down provocatively (Thomsen 1929, fig. 18), underlining that the belt-plate was a separate and distinct part of the costume and had its own character and role within the jewellery set. As Thomsen wrote, 'Den store runde Metalplade har da muligen på Egtvedpigen været et stykke af Virkning som de indiske Danserinders runde Brystplader, på een gang dækkende og æggende' ['The large round metal plate on the Egtved girl may have been a piece like that used by Indian female dancers around breast plates, both covering and scintillating'] (Thomsen 1929: 182).

It is therefore the way in which belt-plates were worn that is noteworthy. Neither in the Egtved burial nor in other female graves is there any evidence that it had been sewn to the costume as was

³ The terms for jewellery forms are used collectively e.g. for all arm-rings, whereas types refer to the different regional or chronological variations in their design. The presentation aims to describe the way the general form of jewellery was worn and use-wear patterns from Periods II to V, and the type descriptions only play an identifying role.

⁴ For their origin see Sprockhoff 1940: 33ff

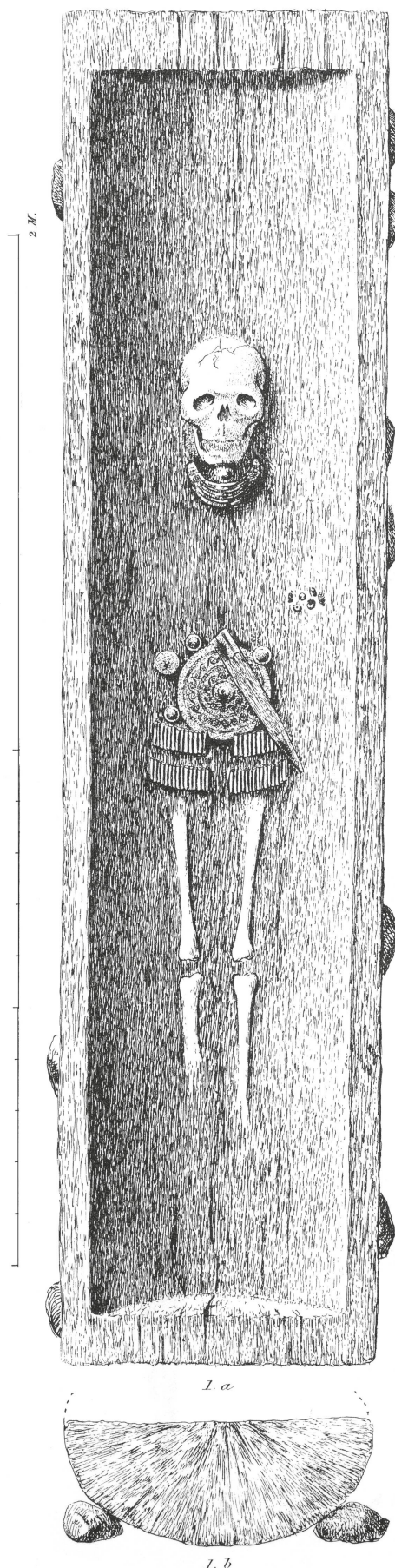


Fig. 1 Female burials from Zealand. From Boye 1896.

assumed by both Thomsen and Broholm.⁵ If it had been sewn on, the stitches would have worn out in a fairly short time. That belt-plates were placed in some burials without being attached in any way does not mean that they were a special category of ritual burial jewellery. A closer examination of the belt-plates reveals that some of them have undeniable traces of wear from having been used for a long time.

One of the most vulnerable places is of course the eye, and on many pieces one can see that this has been worn thin, or even all the way through. It is also not uncommon that the edge is worn in places (so that the rounding is uneven). The worn part had therefore been placed upwards, receiving wear during frequent and repetitive activity such as bending forward or sitting down; what is even more surprising is that the front or upper side of the belt plate is often worn, too. The ornamentation can be both moderate and heavily worn. This is also true concerning the protruding point. Compared with an unused belt-plate, it can be seen particularly clearly. One should consider, however, that the ornamentation could have had different depths on each belt-plate. With the wear comes an evening out and rounding of all corners and contours, and with an holistic view of the eye, the edges, the protruding point and the ornamentation a characteristic wear pattern is evident. If the edges and the eye are worn, then the ornamentation is also worn.

At the transition to Period III the spiral-decorated belt-plate with eye went out of use and was replaced with a slightly different type, developed from the Period II tutulus, with a step-shaped base with a protruding point and a cross bar under the bottom for fastening. In Period III it grows in size and the point ends with a flat or umbrella-shaped circular plate. While in Period II there is no problem distinguishing between tutuli and belt-plates, partly due to the spiral ornamentation on the latter, it is more difficult in Period III, because there is no formal or stylistic difference. Neither is the size a useful criterion as there was a gradual transition from the small to large ones. Generally, the diameter is smaller than in Period II, and the most common size is the same as in Müller 1891, nr. 16. The larger ones are uncommon, but when they are found they normally occur in Zealand. A terminological difference between the tutulus and a belt-plate may therefore be a useful starting point.

When there is only one found in a burial it probably functioned as a belt-plate judging from some of the well-documented inhumation burials.⁶ This view is strengthened by the fact that in many burials one finds the object in combination with belt jewellery/double button and in some burials together with the belt. The double button was used to close the belt on which the belt-plate was placed. In one inhumation it looks like the belt jewellery had been worn on the back as the eye was placed upwards.⁷

The wear on the Period III belt-plates is the same as in the previous period, except for the fact that here it is mainly the upper plate

that has seen the most wear. In some examples they were already broken in prehistory.

Belt-box

In Period III a new form of supplementary belt jewellery was introduced: a circular, flat or slightly pointed base, cast belt-box with low edges, on which two eyes, with small rectangular openings, were placed facing each other. In some cases the box could be closed with an associated bronze lid. The flat base was also decorated with one or a number of cast circular decorative bands, U-shaped depressions (star motifs), which have been filled with resin. The sudden appearance of the belt-box can best be explained by assuming that a decorated prototype in wood had existed. The technology of making decoration by cast depressions seems to mimic wood carving. Star motifs were already in use in Period II, where they appear on wood and bronze bowls (Hundt 1958a).

Due to the introduction of cremation in Period III it has not been possible to observe the placement of the boxes on the deceased. It is therefore an open question as to how this jewellery was worn. On the box in the burial from Magelhøj (Boye 1889) the lid closed with a wooden pin and it contained for example two horse teeth, some weasel bones, a part of claw of a lynx, vortices of snake, some small stones, pyrite etc. Animal teeth, fragments of animal bones and minerals were given a specific meaning in the Early Bronze Age. A small collection of wild boar and dog teeth was found in a Period II female burial from Bustrup,⁸ and similar collections can be found in male burials in the so-called sorceress bags (Lomborg 1956: 177-76, fig. 24).⁹ The belt-box can therefore probably best be seen as some kind of amulet hideaway.

Does the special closing mechanism on the Magelhøj piece, a wooden protector, as found on belt-boxes with wooden lids (Friis 1961, fig. 9), indicate that they were used solely as stationary hideaways for amulets? Hardly, for this arrangement was instead aimed at situations where the owner was unable to wear a belt-box. That they were worn on the belt, based on the use-wear, has already been determined by Neergård (1897:86-87), and therefore they are rightly called belt-boxes. This is also suggested by the belt-box placement in the Vile burial.¹⁰ In many pieces a substantial expansion of the eye can be seen, which can hardly have been caused by a wooden lid, as wear of this kind requires some kind of suspension. This was probably created by a leather strap, as has been documented in at least one burial.¹¹ Both the eye and the edge of the belt-box show an equivalent degree of wear, and the eye on some of the pieces is worn all the way through. Combined with a suspension of the box, only the placement on the belt can explain this wear. This is corroborated by the fact that the edges between the eyes are slightly bent by wear, which is analogous with the wear of the belt-plates. Finally, the ornamentation on the base shows a similar degree of wear to the eye and the edges, i.e. creating a consistent pattern of wear. One could argue that the wear on the base indicates that the belt-box also functioned as a standing box. However, put together with the wear pattern on the boxes, this does not seem probable. This is a problem that will cast more light on in the discussion concerning the hanging bowl.

⁵ In Thomsen's report it says 'the belt plate has *clearly* hung from the belt on the naked body parts' (translated from the Danish, author's italic). There are not any other observations concerning how it was attached other than the underside of the hanger ran approximately parallel with the coffin's length. Taking into account the good observations of the excavation in the laboratory it could mean that it was not fastened in the burial, unless poorly conserved leather has played a role here. The direction of the eyelet does not bode well for the conservation of the leather, but the question has to remain open.

⁶ In the following inhumation burials in Period III the tutulus was worn as a belt-plate DB I Nr. 1272, 1862, 1899, 2339, probably 1950 as well as Tornhøj, Copenhagen County (B14087-88).

⁷ DB I 1862

⁸ DB I 741

⁹ Wrapped beaver teeth have been found in contemporary inhumation burials in Europe (Hundt 1958b).

¹⁰ DB I 1915

¹¹ DB I 1417

Tutuli

The label tutuli (singular tutulus) was designated early on to distinguish some small circular bronze plates, which have an eye or crossbar on the underside and a more or less protruding tip on the upper side, frequently crowned with simple stamped or punched decoration (Thomsen 1836:57).

‘The crossbar position underneath shows that these Tutuli had been fastened with a strap and that they probably had functioned as decoration’ (Rafn 1956: 361 nr. 8). This is confirmed by a find of a tutulus in 1842 that still had a strap in place (Thomsen 1857: nr. 12) and a burial find from Steengård which was given to the Crown Prince in 1842, where six tutuli surrounded a ‘shield plate’, with one having a leather strap still attached. The remains of the oak-log coffin were wrongly interpreted as the shield. It was therefore concluded ‘that in this period it was common to have a shield of oakwood, which was kept together in the middle by shield buttons and in the periphery by these tutuli’ (Rafn 1856: 362). As already mentioned it was first with the careful excavations in the 1880s that the use of the belt-plates and the tutuli was properly documented.

In Period II two different kinds of tutuli were used. The most common was a flat type with a short protruding tip and an eye on the underside. The plate is decorated with simple rows of beads or thin cross-hatched bands. A less common type has a vaulted, often step-shaped tip, under which a cross-bar was placed.¹² In Period III the latter became the predominant type. It had a little circular plate on the top of the tip, but was seldom used as a tutulus. After this period, tutuli went out of use.

On the flat type the eye is rather small and was most likely sewn onto the clothing or belt. The hemispherical type, however, as mentioned above, was used with a leather strap. In female burials the tutuli exist in various numbers,¹³ and frequently in connection with a belt-plate. They appear most commonly in pairs but in some burials there are up to a dozen. Often the tutuli were made in matching pairs. In a number of well-documented burials, especially from Period II, it is evident that they could be worn in many different ways. For instance, they could be pulled or sewn onto the belt, so that they were placed in a row on both sides of the belt-plate.¹⁴ In a number of burials the tutuli were placed in a circle around the belt-plate, e.g. Figure 1, and some of them must have been sewn onto the clothing. A number of the hemispherical tutuli in Fig. 1 could, however, have been placed on a string for the dagger. In other burials a different mode of wearing them has been found¹⁵ where the torso is covered with tutuli, and they could have been sewn onto the blouse or something similar. Finally, there are a few burials where two hemispherical tutuli with crossbars were placed at the shoulders, one on each.¹⁶ This mode of wearing could have been used in many of the burials with two tutuli and poor information about find circumstances.

From Period III there are only a few observations regarding how

the tutulus was worn. In Bragergård¹⁷ there are 12 all grouped onto a leather strap, probably a belt, and some pairs of finds are also known.¹⁸

The use-wear pattern is the same as on the belt-plates. The eye is often moderately or heavily worn, and in some cases worn through. The ornamentation on the upper side is also worn to a similar degree as the belt-plates.

Neck-collar and neck-rings

The neck-collar, together with the spiral decorated belt-plate, is characteristic for Period II. In its classical shape the collar is cast with horizontal grooves, where it is normally stamped in a vertical and sharp-edged hourglass. At the ends there is an area which normally is decorated with spirals. The crescent-shaped collar is widest on the middle part and becomes smaller at the ends, which are coiled into a tube.

In the early days of archaeology it was believed that this jewellery was worn as a diadem (Worsaae 1859:47; Madsen 1872, pl. 31), however, the placement in the Ølby burial (Fig. 1) and in a long line of burials found later, has shown that it is a form of neck jewellery.¹⁹ In some cases the opening is so wide that it would be no problem to put it on, where in others it is so small that it had to be everted. By attaching the coiled ends with a leather string one could then tighten the piece together. This resulted in some pieces snapping and these had to be repaired. The closing method is also clear in some pieces by the use-wear on the coiled ends. As one might expect, the edges of the neck collar are frequently worn, and to spare the blouse it was often bent forward like the edges on the belt-plate. It is, however, striking that on the pieces where the edges and the coiling are worn, comparable wear is found on the decoration. On heavily worn examples the hourglass stamps are almost completely worn away, as is the spiral ornamentation on the ends.

In Period III neck-rings dominate, especially on Jutland, where Period III extends longer than in the Danish Isles.²⁰ Neck-rings were typically worn singly, or less often up to three could be worn at the same time. They are generally twisted, but can also be cast, and some are decorated with ornamentation. As with other jewellery forms, the neck-ring displays different degrees of use-wear, mainly on the underside, however, with heavily worn pieces, use-wear can also be observed on the top of the neck-ring.

Arm and ankle jewellery

In the Early Bronze Age arm and ankle jewellery was generally reserved for women. However, arm-rings do exist in rich male burials, so there are then a few exceptions, and in these cases they are made of gold and often have spiral-coiled ends.

Ankle-rings are unusual. In Period II they are documented from two burials²¹ and in Period III from three, and are probable in another two.²² The use of ankle-rings does seem random in

¹² The type with a hemispherical rounding and crossbar are more commonly found in male burials (Broholm 1944:107). Its presence in the Ølby burial is an exception.

¹³ Tutuli were also used by men, normally found in pairs and found in 54 burials according to Broholm. In Mjøldebjerg, two were found on the torso with the eye turned upwards, and according to Boye it seems to have been pulled on the leather straps that kept the man's wrap-around together. Broholm, however, thought that they were used to fasten the clothing folds on the back, as sewn-on buttons. The latter seems more likely, and their use-wear indicates that they were worn under the cloak.

¹⁴ DB I nr. 268, 441 (Sehested 1884: Pl.IV), 1046 and probably 728 and 1417.

¹⁵ DB I nr 695, Albrechtsen 1952, fig. 2.

¹⁶ DB I nr. 294, 354

¹⁷ DB I 1417.

¹⁸ e.g. DB I 2136.

¹⁹ Concerning the origin of the neck collar see Sprockhoff 1939 and Petersson 1950.

²⁰ Period III style developed on Jutland, and lasted longer here (Randsborg 1968 and 1972).

²¹ DB I nr. 984 (foreign type) and Skrydstrup (Becker 1946, mound 57, burial 1).

²² DB I nr. 1392, 1862, 2009 and probably 1915 and 2339.

contrast to e.g. the Tumulus culture, where special ankle-rings were never created.

However, arm-rings were used, particularly in Period III. A number of different types existed (Kersten 1935:44ff) and in both Period II and Period III they were either ribbon-shaped or solid in form. To that may be added, of course, the spiral arm-ring, which was used in both periods, albeit only infrequently. The ribbon-shaped arm-ring is normally horizontally ribbed and the solid type is ornamented with line bundles. Normally arm-rings were worn in pairs, and they were often made in pairs. In special rich graves one may find more than one pair, and in some of these examples it looks like the individual wore one pair on the one wrist while the others were placed on the arm, as the diameters vary on the different pairs.²³

Evidence of wear can be seen on most arm-rings on the decoration.

Fibula

The dinuclear Nordic fibula is a classic example of the change of form and style from Period II to Period V (Oldeberg 1933), and it was naturally one of the first artefact types that Montelius made a typology of (Montelius 1874:219ff), which was the pre-study for *Om tidsbestämning inom bronsåldern med särskilt avseende på Skandinavien* (Montelius 1885) - the foundation for Nordic Bronze Age chronologies.

The fibula is developed from the normal pin with a hole through the head (Müller 1909:40), where the 'hanger' only was a piece of leather or textile string which was tied to the hole and bound at the tip of the pin, so that the pin did not slide (Kersten 1936:32). When the hanger was transformed the dinuclear fibula was created.

The fibula generally occurs as a single find in female burials in both Periods II and III (Broholm 1944:123, footnote 4 and 166, footnotes 2-3). However, one has to ask what function it may have had, because in contrast to the male costume²⁴ the female seems to need one. The explanation might be found in the Borum Eshøj burial 'Considering the dress it is said that the slit in the blouse's neckline was kept together with the fibula' (quote from Simonsen's report based on information from the finders). If that is the case, then the width and placement of the fibula might have determined how tightly fitted the blouse might be. Is that, perhaps, the risqué explanation of its function? Or should we stick to the more prosaic opinion that the score in the blouse was made in connection with the burial, in order to dress the deceased more easily? In support of this is the fact that e.g. it has no hem (Munksgård 1974:70). We have to settle with concluding that when a fibula was worn by a woman it was frequently placed across the torso, possibly to fasten the blouse.²⁵

A small number of burial finds show that there was also another way to wear fibulae.²⁶ In these cases the fibula was placed by the

head, outside the skull, where it could have been holding a hairnet or some other kind of headgear.²⁷

Finally it should be noted that in some well-preserved fibulae one can observe degrees of use-wear on the ornamentation.

With the exception of the jewellery described above, women frequently had ear- and finger rings, the latter made of coiled bronze or gold spirals. Gold spirals were also worn in the vicinity of the ear, especially on Jutland (Thrane 1962, footnote 13). Amber and glass jewellery are only found in the richer burials, sewn on the clothing or were worn as an arm-ring or necklace (Fig. 1; Becker 1946; Thrane 1962:92, footnote 29; Sprockhoff 1961, Abb 2).²⁸

The most common forms and ways of wearing jewellery in the Early Bronze Age based on find context and use-wear have now been described. This is generally uniform and consistent through both Periods II and III. It was also shown that the upper side of a piece of jewellery was normally worn to the same degree as the use-wear on parts that were more directly impacted by the way it was worn. We will return to a more thorough explanation of this later. First, a similar review of the Late Bronze Age jewellery types will be presented. The focus here will also be on how the artefacts were worn and their use-wear, as well as the extent to which the Early Bronze Age costumes were transferred.

Late Bronze Age

The most frequently occurring jewellery is depicted in already mentioned publications. It is commonly recognized that from a purely typological perspective there was no break between the Early and Late Bronze Age jewellery types; rather continuation and tradition are evident. However, the picture changes on one key point relevant to this examination, which is the consequence of cremation which became the sole burial tradition. The shift to urn burials means that there was no longer a place for the large jewellery sets in the burial context. They were instead deposited in fields and in bogs (Hundt 1955). The complete body of analysed material therefore stems from hoard finds, which deprives us of the possibility of finding out anything about how the objects were worn based on the find context. From this point on we only have use-wear as an indicator.

Hanging bowl (belt-bowl)

In Period IV the belt-box developed into a bowl consisting of three parts: bottom, shoulders and neck. The neck is ended by a lightly thickened edge orifice, from which two rectangular opposing eyes were placed. The bottom is vaulted, in Period IV funnel-shaped and in Period V rounded. In both periods it is generously covered in ornamentation. In Period IV it is centred around star motifs (both cast and punched) and in Period V with rows of closed bands of waves (all punched). The hanging bowl is therefore a jewellery type that only goes through smaller formal and stylistic changes during the Late Bronze Age, therefore the following description of its use-wear and how it was worn covers both Periods IV and V. The hanging bowl was, like the belt-box, worn on the belt, which can be seen in the heavy wear on its sides and eyes. The

²³ E.g. DB I nr. 1393 and 2057.

²⁴ In male burials a fibula was employed to hold the cloak together, probably at the right shoulder, as suggested by Almgren (1960), and as was the custom in the Tumulus culture (Trogmayer 1975).

²⁵ DB I nr. 236, 620, 791, 1686, 1746, probably 1862, 1929 and 2042. Also Kaas, Viborg amt (B 14199-201). A similar use can be seen in northern Germany, cf. Wegewitz 1949: 178 and Beltz 1910:181. Illustrations in Körner 1959, pl. 3 & 4; Schwantes and Kersten 1939, abb 445; Schubert 1958, abb 32; Bohnsack 1961, abb 4; Sprockhoff 1963, abb 13.

²⁶ DB I nr. 441-41 (Sehested 1884, PL. IV & VI), Skrydstrup (Becker 1946, mound 31, grave a, mound 57, grave 1), Skovby, Odense amt (F.S. 9434-43), Mangehøj, Holbæk amt (B14573 & 15197-211, Bue-Madsen and Bendzen 1968).

²⁷ In the Lüneburger area the women wore fibulae on the back side of the head, which has been suggested to have held a hair knot (Laux 1973:55-56).

²⁸ In a burial from Oudrup, Ålborg County (B 15328-31) a V-drilled amber bead with added holes in the edge was placed at the head. There was a 2-ply thread in the holes and over and under the bead were remains of hair. It was probably worn in connection with a hairnet.

edge part between the eyes is worn in an even curved process, due to contact with the body, as the eyes are extended and in some cases worn all the way through due to the suspension in the belt (cf. Figs. 4 & 5). Thus the hanging bowl is belt jewellery that has never 'hung', and it should more accurately be called a belt-bowl, a term that is suggested for use in the future. The term 'hanging bowl' goes back to archaeology's infancy, when for a long time this type of jewellery was mistakenly seen as a metal urn that had been hung through the small loops or eye-holes.

The question now is: did one wear the hanging bowl/belt bowl on the front or on the back? A little bronze figurine from Itzehoe provides a clue about this, as it has a bowl-shaped ornament on its back which was worn in a belt over the corded skirt (Munksgård 1974, fig. 50a). This way of wearing it seems probable when one considers how accurately the jewellery, costume and headgear are portrayed on these figures. It would also have been fully logical when it is seen in connection with the belt jewellery's function and mode of wearing.

It is, however, striking that the bottom is worn to the same extent as its sides and eye. With a moderately worn piece the wear is particularly noticeable in the centre, but with more heavily worn pieces the worn parts cover the bottom completely.

Belt buckle

In the Late Bronze Age the belt-plate developed into a buckle, with the plate having been exchanged for a dome. The protruding tendency that characterized Period III was further developed, in that the actual plate was raised, while the neck became shorter and thicker. In Period IV the plate is normally tunnel-shaped and in Period V domed-shaped (cf. the bottom of the belt-bowl). In Period IV, to fasten it to the belt there was either a crossbar under the centre of the plate, as in Period II, or a wheel-shaped disc to fasten the belt with; NB: the latter is a trait taken from the double button. In Period V this difference disappeared, with the majority of the belt buckles having a rectangular eye on one of the sides used to fasten the belt and on the other a button placed on a bar.

While in the Early Bronze Age the belt-plate was worn on the belt without having a practical function, in the Late Bronze Age the buckle actually functioned as a belt buckle. The explanations for these changes can be found when looking at them in connection with the belt-bowl, where the eyes show that the individual was wearing a broad belt, which must have demanded a string fastening if the bowl was to have been kept in place. As we soon will see, the use-wear left clear evidence of this on many belt buckles. On moderately worn pieces the mouth of the thickened neck is more lightly worn, especially the part that faced the torso, while on the more heavily worn pieces the wear is more even and takes a curved course. This corresponds with the eye and button, when the belt on the more heavily worn pieces has a worn furrow on the bar over the button, which resulted from the pull from the belt which was often slightly skewed. We can therefore easily reconstruct its use, and one end of the belt has been fastened to the eye while there was a hole for the button on the other end. When the belt was fastened one would have gripped the buckle with the right hand and the loose belt end with the left hand, and the latter end was then buttoned on. When the belt was fastened, though, it is natural that it was progressively pulled askew and the belt has therefore worn a furrow in the bar. The primary reason for this was, however, that it should hold the belt-bowl in place on the back. The curved wear of the side of the mouth edge that was turned toward the torso was created when the wearer sat down or

bent forward. Thus, in the Late Bronze Age, the belt and the belt jewellery formed a particular and independent costume piece, just as it had done in the Early Bronze Age.

The plate and the tip of the belt buckle were worn to the same extent as the eye and its edge, precisely as in the case of the belt-plates and the belt-bowl. Some of this wear can be explained by the fact that one held the jewellery every time one put it on, however, in that case it would be limited to the right side of the plate. It is noticeable that the complete part of the surface of the jewellery is worn. On moderately worn pieces the wear starts on the top plate and expands from there downwards, extending over all of the plate on the heavily worn pieces.

Neck jewellery

The jewellery form that experienced the most radical change in the Late Bronze Age is neck jewellery. Period IV and Period V types will therefore be described separately.

The typical Period IV neck-ring was hollow cast and the twists are cross-hatched in groups, with three rings making up a set. In order to be worn, one first had to detach the outermost part, which was fastened with a pin, or there may have been a specific removable intermediate piece. The diameter of the innermost ring is normally not more than 11-13 cm, so that it would have been positioned tight to the neck; the openings on many of the rings are so narrow that only a very slim figure could get them on.

When the rings were placed layered over each other, it is only natural that they became worn where one ring was resting on another. It is noticeable, however, that on these the cross-hatches on the other part of the rings are also somewhat worn. On heavily worn pieces it can be completely worn down, which is also true for related Swedish rings (Montelius 1917: 1274 & 1275).

In Period V a twisted or cast neck-ring was introduced with a massive ring body and oval jewellery plates, which either ended with a hook or spiral-coiled ends. The end-plates are often decorated with hatched triangles or ship figures with the keels facing each other, surrounded by a swirling band.

The way these were worn was explained by Sophus Müller as early as in the 1890s. Previously, they were seen as hair-rings (Worsaae 1859:47; Madsen 1872: 32), however, Müller could show by studying, among other things, the wear of the rings, that it had been worn as a neck-ring, with the end-plates resting on the neck with the spirals pointing upwards. On heavily worn pieces the twists are somewhat smoothed by wear on the part of the rings where the lower side was resting on the torso. However, the part of the ring that rested on the shoulders or the clavicle is completely worn away. The lower edges of the end plates, which rested on the neck-shoulder parts, are also worn down with the ornamentation, and it is generally mostly worn in the lowermost area. Further, this is also true of the spiral's upper edge on the most heavily worn pieces, which were worn down due to contact with the neck and back of the skull.

Neck-rings of this type are rather large and have a diameter between 18-23 cm (or more), as they were placed in position by threading them over the head. The oldest types could be open a bit, but this was not possible with later pieces. The diameters therefore increase and the opening was made oval in order to be adjusted to the shape of the head, so it was easier to put on.

Arm and ankle jewellery

Arm and ankle jewellery are generally ribbed-shaped in the Late Bronze Age. In Period IV the profile is roof-shaped and in Period V it is wave-formed, and the rings are provided with rattle plates. In addition, one might wear massive arm-rings with thickened ends, especially in Period V, while the gold rings were common in the whole Late Bronze Age. They were worn as arm-rings, which can most frequently be observed by the wear of the end ferrules on the outer side. This is due to repeated contact with the clothing.²⁹ Arm spiral rings were still in use, and were worn on the forearm as is shown in their slight tunnel-shaped profile.

In Period IV ribbed-shaped rings have been found in pairs in a long series of finds. In the hoards there have been a larger number of rings, and a closer examination of the wear often indicates that they were worn as a pair, as they were also made in pairs. As a rule one only wore one pair, however in northern Germany it was common that to have more than one pair. In order to decide how they were worn one has to take the following parameters into consideration: the diameter, the expansion mechanism and the wear. Both undecorated Danish and decorated North German rings (type Oldesloe) have a diameter which corresponds with the most common diameter in, for example, arm spiral rings. They exist in everted condition only rarely. This indicates that they were worn on the arm, as this only demands a slight expansion to get the ring over the hand; therefore, they are seldom broken or repaired. If they had been worn on the ankle it would have required much more stretching due to the ankle's smallest diameter, rarely under 4-6 cm. To this can be added heavy wear on the surface of the ring, which is most clearly seen on the North German Oldesloe type rings, and could be due to contact with the clothing. The ribbed-shaped ring was, as in Period III, worn as an arm-ring.

The decorated cuff-shaped rings, which have their widest distribution in north-western Jutland (Ørsnes 1958: fig. 26), differ from the other arm-rings by frequently having a larger diameter. One pair that is everted to the point of distortion also exists, and in Brobjerg one of the rings is convoluted and has an 8 cm deformity. Moreover, the surface of the rings appears not to have been worn. The type is often found together with arm spiral rings, so they have most likely been worn as ankle- or leg rings, probably the latter. The diameter is normally somewhat larger at one end of the ring, indicating that the smaller end was turned towards the ankle and the wider upwards. The cuff-like profile can best be explained by assuming that it was worn as an ankle ring, enclosing the calf muscle.

The profiled ribbed-shaped rings from Period V have been interpreted as arm- and ankle-rings. Sophus Müller (1891: nr. 398-99) calls them arm-rings and adds 'by the use-wear it can be seen that the rings were usually worn at the edge, on which the added plates were placed, and one was turned upwards'. H.C. Broholm (1953: nr. 188) interpreted them differently, and calls them arm- or ankle-rings. 'At those edges that may have been turned upwards, or in the middle there are often eves, in which there hangs rings or rattle plates. The wear is always at the eyes at one side, and never in the middle (when the eye turns vertical – my addition), indicating that these rings were used as ankle rings,

in that it always must have had the same position'. Broholm's argumentation is rather convincing, especially if it is compared with a number of other facts that point in the same direction. Many of these rings are in non-everted condition and have diameters that make them unusable as arm-jewellery, but would have been viable if worn as leg jewellery. Many of the pieces have been broken in prehistory due to forceful or too frequent opening, something that would not have been necessary if they had been used as arm-rings. Many of the very tall pieces are slightly funnel-shaped, but they would also have been worn as ankle-rings. Furthermore, on some rings with *Knebel*-shaped rattle plates a semicircular worn groove can be seen brought forward by the Tommy when it swung back and forward. It shows that the rings were used vigorously and consistently. This also stresses that it is most likely that they were worn as ankle-rings. Furthermore, in some female equipment hoards they are found with arm spirals and ribbed-shaped rings. However, it cannot be excluded that some of them were used as arm jewellery, especially the smaller pieces (Kristiansen 1974:17-18).

Fibula

In the Late Bronze Age the fibula developed into straightforward ornamental jewellery, which was only used by women. In the Late Bronze Age the practical function that the fibula had had was instead achieved by dress-pins. As a natural consequence the practical functions of the fibula were increasingly ignored in favour of the decorative effect of the design. In Period IV the pin became shorter so that the plates could be made bigger, first by flat hammering the spirals and later there was a special plate and socket cast that were soldered together (spectacle fibulae) to finally be cast as one at the end of the period (plate fibulae). In Period V plates were decorated with new features and the size continually increased.

The question that arises is: how did one wear the fibula? Unfortunately, here we have to be satisfied with various hints, which at least complement each other and point in the same direction. One of the lost figures in the Grevenænge hoard, which is only preserved as a sketch, is standing upright with a raised arm, and across the torso is something that looks like a fibula (Djupedal & Broholm 1952, fig. 7). Experimental testing and use-wear analysis supports the horizontal placement. It shows that the pin normally rested against the holder for the pin, and many pieces show that this broke and had to be re-cast. The fibula was therefore normally worn horizontally with the pin-side turned upward and most likely on the torso. On many fibulae the plates are therefore bent upwards a bit, which harmonizes with a placement on the bosom's groove³⁰ (the tradition from the Early Bronze Age therefore continued over time).

The use-wear on the pin and the plate's surface can be seen to varying degrees. On the most heavily worn pieces the ornamentation is almost completely worn away. Furthermore, there is wear on the plates, at least on the part that turns towards the pin.

Costume

We have now seen that the jewellery custom continued without a change throughout Early and Late Bronze Age. However, the

²⁹ In the Early Bronze Age the massive gold arm-rings are almost always found in male graves. Therefore, I am inclined to see these as mainly a male-type of jewellery. They are sometimes found in hoards with female jewellery (DB III M11, 158 & 164) and in burials without sex-indicating artefacts (DB III nr. 1059), and in urn burials with male objects (DB III nr. 1113 & 1117). For the most part, however, they are found singly or in pairs in closed gold hoards (Kristiansen 1975, fig. 3).

³⁰ The use of torso jewellery is particularly clear in the fibula from Mandemark (Thrane 1958) with large spiral coils, which arches, one on each side of the breast. Some Period VI fibulae have downward-bent plates (Oldeberg 1933, fig. 159), and those could not have been worn on the bust.

use-wear pattern that is characteristic for the different jewellery types cannot alone explain how they were worn as they also have a characteristic surface wear. Therefore, another factor must have played a part in creating this wear. I would therefore put forward that this recurring and uniform wear pattern that has been seen on the female jewellery in the Nordic Early and Late Bronze Age is not only a manifestation of the existing standardized ways of wearing the jewellery, but also evidence for the occasional use of a costume that was worn over the jewellery, covering it and therefore wearing down the surface. On this evidence a new definition of the women's clothing in the Bronze Age should be formulated, and an attempt is made to reconstruct the way the clothing was worn.

When there is wear on jewellery from Bronze Age sets, the single pieces are almost always equally worn.³¹ The most likely explanation for this is that there was a common factor behind the creation of the use-wear. This can hardly be accounted for by anything other than a covering piece of clothing.³² Based on the way the jewellery was worn one may conclude that it was probably a larger coherent piece of textile, due to the fact that it must have covered the back and the front of the wearer, from the neck to under the waist. The wear pattern of the lower side of the belt-bowl shows that the textile hung relatively loosely, as it touched the top of the belt bowl as well and only when the wearer bent forward could the in-turning sides be touched. Thus, there is less wear there than on the top. Over the torso rested pieces of clothing that wore down the fibula evenly. It appears to have had a high neck, as it rubbed against the endplates of the neck rings and the front of the neck collar. The surface use-wear on the arm-rings can probably be attributed to rubbing against the blouse and the fact that it was covered by the costume, so that the arms were covered. The existence of a covering piece of clothing has been suggested in the past based on the evidence from a couple of North German graves, where the torsos, including the bust jewellery, were covered by small bronze studs, which suggest they had been sewn onto something placed on the shoulders (Piesker 1958: taf 66; Schubert 1958 abb 32). It must be related to the phenomenon met with in the Danish female burials, where the torso was covered by tutuli. For the first time now it can be said that this covering piece of clothing was frequently used in the whole of the Bronze Age in the Nordic sphere. The length of this covering piece of clothing cannot be determined, of course, however knee- or ankle length seems most probable, when one considers that it functioned as a covering on top of the usual costume, including the jewellery. Its primary function must therefore have been to give warmth and to protect when necessary. The female costume in the Nordic Bronze Age must therefore have had three elements:

1. An Egtved costume, containing a corded skirt and a blouse
2. A set of jewellery, which probably varied according to social status, and
3. A covering piece of clothing, similar in concept to the cloak worn by men

These three elements together form the definition of the Nordic female costume.

³¹ Naturally, there are examples which show that the women obtained new supplementing jewellery or exchanged an old one. The uniform wear of the jewellery sets is, however, a recurring trait, and on the basis of this it is possible to separate individual jewellery sets in composite hoards in the Late Bronze Age (Kristiansen 1974). A definition of different use-wear categories has been used with success in chronological studies (Kristiansen 1972: chapter 2, unpublished gold medal thesis).

³² In opposition to this is the fact that the punching of the ornamentation also played a role. If this were the case all plates would be worn equally, and this is not so.

One question immediately arises following this redefinition of the female costume: what possibilities do we have to gain a better understanding of what the covering piece looked like and how it was worn? To answer this we first have to look at the textiles in the preserved oak-log coffins burials in order to see if there is something that could have been worn in a way that corresponds with the use-wear pattern; one therefore has to look at the large cylindrical pieces that were sewn together and which are known from Borum Eshøj and Skrydstrup (Broholm & Hald 1940, figs. 83 & 134). The interpretation of these two pieces of clothing have been disputed. For many years the Borum Eshøj burial was the only example of a female costume. In A.P. Madsen's and Boye's publications of the find (Madsen 1876:9-10; Boye 1896, Pl. 11-12) it was presented as a skirt, kept together by a belt. They mainly relied on the observation that the belt-plate had left a layer of green patina over the textile, which therefore had to be wrapped around the deceased as a skirt. They therefore assumed that this was the way it was worn on a daily basis. Müller followed this interpretation in *Nordische Altertumskunde* (Müller 1897, abb 131) and he added, 'An der Kleidung selbst waren Fransen angebracht, umwunden mit zusammengerollten Bronzeblech' (Müller 1897: 276, abb 139). The real explanation to this came first with the completely preserved corded skirt in the Egtved burial (Thomsen 1929), which for the time was a somewhat shocking find: a Bronze Age woman dressed in a short and partly see-through skirt.³³ Thomsen suggests that it was either an airy summer dress or it was the clothing for a young girl (Thomsen 1929: 195), and argued that Borum Eshøj represented the winter attire or the dress for the married woman.

The discovery of the Skrydstrup burial in 1935 complicated the picture. It was a young woman buried during the summer, but instead of a corded skirt she wore a large tube-shaped piece of clothing that covered her from her hip to the feet, and it was held together by a belt. Both the theory about the summer dress and the young women's dress fell apart. However, Broholm pointed out that the piece of clothing could never have been worn the way it was positioned on the dead girl, as the belt was placed below the hip and the skirt would have had a long train (Broholm & Hald 1940: 155). Broholm therefore suggested that it had the function as a skirt shroud³⁴, maybe to hide the lack of a corded skirt (Hägg 1968: 85).

The existence of two contemporary and almost identical pieces of clothing found far from each other lets us presume that we are looking at a common type of clothing. It is therefore natural to reconstruct the way it was worn. A copy of the Skrydstrup dress was made by Margareth Hald. The result, which can here be seen in Fig. 2, was strongly inspired by the arrangement in the coffin, and neither Broholm nor Margarethe Hald saw this as particularly convincing.

A new reconstruction attempt was made in 1949 by Inga Henning Almgren (Almgren 1951), who suggested that it had been worn in the style of Classical Greek people (Fig 3; an idea that had previously been suggested by Nørlund 1941). A number of practical reasons support this solution, including the better use of the fabric. The argument was expanded further by Inga Hägg in 1968 when she pointed to a number of similarities between elements of costume from the Nordic region, Europe and Greece-

³³ The reluctance to accept the use of the corded skirt is a good illustration of the dependence of research on its time and environment (Harald-Handsen 1949, 1952; Broholm 1950 and references).

³⁴ In the same manner that the dead man's cloak was placed covering the deceased, or, as in the case of Muldbjerg, was folded and placed in the bottom of the coffin.

Macedonia (Hägg 1968). It must, however, be noted that Inga Almgren did not use exact copies of the Skrydstrup or Borum Eshøj garments in her reconstruction, but a somewhat smaller version.

To sum up, 'Stand der Forschung' concerning the female costume in the Nordic Bronze Age leaves us with two different types, exemplified in the Egtved burial and the Skrydstrup burial. For the Late Bronze Age only the corded skirt can be documented, as it can be seen clearly on a number of small bronze figurines (Broholm & Hald 1940, figs. 192-195 and the presence of tubes for the corded skirt (Broholm 1946; burial 1372, and M 52). However, the tube-shaped piece of clothing from Huldremose (Hald 1950, figs. 425 & 427), which probably dates to the Early Iron Age, demonstrates that a related type was also continuously used throughout the Late Bronze Age.

As has just been shown, there was only one type of costume in the Nordic Bronze Age, and this contained the Egtved clothing, jewellery and a covering piece of clothing. The different components of clothing in the Egtved and the Skrydstrup burials can therefore best be seen as parts of a common costume, where the cylindrical clothing piece represents the covering garment. Due to its use as a shroud at the funeral, we cannot see how it was worn in life. Tacking it with a shoulder pin does seem the most likely scenario. Support for this can be found in the Tumulus culture, closely related to the Nordic Bronze Age. Here women were buried with two long shoulder pins (Holste 1953: 103; Ziegert 1963: 41-42), which could be worn both horizontally or vertically, which is clear from Nau's classical drawings (Fig. 4, Naue 1894, Taf. V, VII & VIII; see also Trogmayer 1975). Some of these pins kept long, full clothing from falling down and attached to the blouse. In South Thüringen, the area for which we have the best knowledge about costume, women however had long sleeves, which makes it improbable that the pins would have been attached to the blouse (Feustel 1958:50). It seems much more likely that they were attached/closed a covering piece of clothing; following Feustel, the *Brillenspiral* attached a special headdress and the wheel-headed pin closed the outer garment. In some cases a head band held the headdress in place (Feustel, Farker & Blumenstein 1970, taf. 34). The blouse and skirt were probably two separate pieces of clothing, as the lower edge of some of the blouses had sewn on *Brillenspiral*, for example in Wixhausen (Jorns 1950, taf. 18). The length of the skirt is more uncertain, as in the Mülthahl burial (Fig. 4) the thighs of the deceased were covered with bronze ornaments, most likely attached to a short skirt like the corded skirt from the Nordic region (Fig. 1).³⁵ The shoulder pins then attached/closed the covering clothing, which covered the blouse, the skirt and the jewellery. In the Late Bronze Age the pairs of pins in the urn burials indicate that the tradition continued. First from the Hallstatt period inhumations give us a clear foundation for this, as they seem to confirm this. In southern Bavaria the women still used two shoulder pins, which have been interpreted by Kossack (1959:99) as attaching as in the case of a Greek chiton. Furthermore, in south-eastern Europe (Macedonia) the rich burial finds in Vergina from Ha B, C and D demonstrate that one still wore a costume corresponding to the one used in the Tumulus culture, i.e. a bronze decorated skirt and probably a piece of covering clothing that was attached at the shoulders with *Brillenspiral* pins (Hägg 1968 and references).³⁶



Fig. 2 Reconstruction of the Skrydstrup costume made by Margarethe Hald.

The similarity in the composition of the costume in the Nordic region and central Europe are for some burial finds so close that one can talk about a common costume, despite any possible difference in the shape of the individual pieces of clothing and despite the difference in jewellery traditions. The lack of pin in the Nordic burials makes it difficult to compare how the covering piece of clothing was worn. Based on the typological community of costume it is, however, not unlikely that they were also used as a pair of pins in the Nordic Bronze Age, where the deceased was not buried in their covering clothing like in the Tumulus culture, but rather the item was employed as a shroud. Furthermore, the pins were also sometimes made of wood or bone, as can be seen in the Late Neolithic.³⁷ Different traditions and burial customs may be the reason that only the clothing was preserved in Scandinavia and the pins in Europe. However, in the Late Bronze Age we frequently find pins, but we lack information of their precise

³⁵ The two groups of bronze tubes placed below the belt most likely decorated the fringes of the belt. A close parallel has recently been excavated on Zealand.

³⁶ I will refrain from discussing the costume in Ha A, as it is known from e.g. Hohmichele (Riek & Hundt 1962) or the Situla art (Lenneis 1972).

³⁷ In the graves mentioned above (footnote 16), the tutuli were placed at the shoulders; they could have functioned as an attachment for a covering piece of clothing, which the deceased was sometimes buried in.

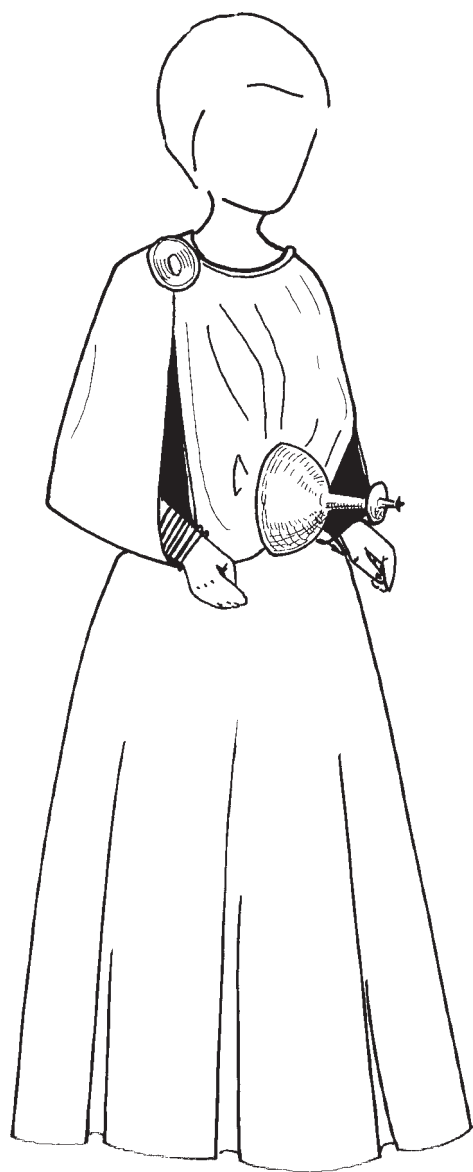


Fig. 3 Inga H. Almgren's costume reconstruction after E. Munksgård 1974, fig. 52.



Fig. 4 Female costume in southern Germany reconstructed by Naue. After Naue 1894.

function. The bronze pins that occur individually in urn burials belonged to the male costume, as tweezers and razors are found with them. They were probably used to close the cloak. From Period IV, however, we encounter a pair of bone pins in northern Jutland. They are the result of a new regional burial tradition, where, in contrast to the earlier tradition, women's pins are found. From Period VI there are a number of hoards with female jewellery that contain pairs of pins.³⁸

There is therefore evidence that indicates the use of an attachment at the shoulders, if one reconstructs how the Skrydstrup and Borum Eshøj garments were worn. We quickly learnt from a reconstruction based on this that the suggestion made by Henning Almgren was not possible, as it creates a long trail at the sides due to its large width (as earlier mentioned Henning Almgren did not use an exact copy). However, the problem can be solved if one lifts the fabric c. 40 cm over the shoulders before it is fastened.

The remaining 40 cm make a hood (Fig. 5) that could be pulled over the head as a cap (Fig. 6). When one pulled the hood up, the wide and very folded fabric fell forward, which warmed the arms and it also closed at the front with many layers of extra fabric (Fig. 6). Furthermore, it should be noted that the remaining fabric fell naturally along the side of the wearer in two broad, folded flaps, which covered parts of the legs. If the piece of clothing was worn as sketched here one would have achieved a comfortable and versatile outer garment. With the shoulder layer down it enabled both the freedom to move and some degree of airiness; however, if one wrapped it around oneself and pulled the cap up, it was secure and warm and could be used as a sleeping bag at night.

It should be pointed out that the garment was most likely worn in other ways as well. Such a simple clothing type has been, and still is, in use in a large number of cultures across the world, as

³⁸ i.e. DB III M216, 219 & 223.

is also true of the corded skirt.³⁹ It is not unusual that there are a number of ways of wearing this type of clothing, and these are essentially dictated by tradition. This again raises the question of comparison between the Skrydstrup and Borum Eshøj clothing, particularly regarding the issue of whether they were used as shrouds or represent a common trait of the everyday costume. Its somewhat casual character and the fact that the hems are turned upwards in both Borum Eshøj and Skrydstrup supports the former. In support of the latter, however, is the fine fitting of the width, as well as the strains in the fabric, which seem to have occurred while the fabric was sewn together.⁴⁰

The suggested reconstruction presented here is found in rock art scenes from Bohuslän (Glob 1969, fig. 198) as well, in scenes which show a pregnant woman with a long garment and a cap, and across from her is a phallic figure wearing a cloak (and therefore armless). In addition to this the often S-shaped figures on the Kivik grave carvings can be interpreted as mourning women, disguised in large outer garments with a hood (Hald 1962:28-29).

The last most surprising evidence in support of this reconstruction is found among the textiles in the Egtved burial. The deceased was covered by a rectangular piece of fabric, which measured c. 250/258 cm x 170/192 cm (Broholm & Hald 1935, fig. 64). If this is regarded as originally having been sewn together as a cylindrical piece of clothing that was separated during the funeral, the 160 cm tall girl was forced to bend c. 40 cm to wear this as a shoulder layer. In this case we have an ankle length peplos with a shoulder cap, which was short enough to avoid a train. A number of things support this interpretation. On one of the sides, on the starting border, one can see that it had holes and had been distorted. One could see the remains of thread in the holes. Broholm finds this noticeable as the fabric had otherwise been regularly woven and he sees this as the remains of the fabric's attachment to the loom. I find it more probable that this is evidence of two pieces of fabric that had been sewn together, as in the Borum Eshøj and Skrydstrup examples, as it is identical with those. Due to the redesigning of the exhibition in the National Museum I had the opportunity to examine the textiles more closely in the spring of 1974.⁴¹ The following observations were made on this occasion. The depiction in Broholm and Hald (1940, fig. 99) of the stitches as overcast stitches can be seen along the complete starting border, even if many threads are missing. The latter can be seen as the threads have left clearly visible holes that correspond with the thickness of the preserved threads. The hem is fairly regular, with 2.5 cm between every stitch, as can be seen on a longer part of the textile. At one of the corners of the starting borders the stitches are ended with what looks like a closed loop, where the remains of a piece of fabric are observed⁴², possibly remains from the edge of the textile to which it was sewn. On the other edge, the finishing border is not preserved, and it is cut off irregularly, in many places skewed in the direction of the thread. The cut is 'fresh', in the sense that it had not started to slip.⁴³ In my view this is evidence that the fabric was cut shortly before the funeral, since the garment was to be used as part of the shroud. One had to cut an appropriately sized piece for this purpose.



Fig. 5 Reconstruction of the covering clothing in the Bronze Age with the hood down.

If this interpretation is accepted, the difference in the costumes that has been noted between the Egtved example on the one hand, and Skrydstrup and Borum Eshøj on the other, is eliminated. Instead, these best-preserved Bronze Age female costumes appear almost identical. They represent a common Nordic costume with some margin for local variations in the size and make of the clothing.

We have now followed the clothing and jewellery traditions through the thousand years of the Bronze Age and have seen how it remained essentially unchanged. There is reason to believe that this mirrors a similar stability in the social structures, as clothing and jewellery traditions from all times have been important symbols for this. We cannot be certain that the costume described in this article was worn by all women in the Bronze Age, only the social group that is characterized by their manifestation of burying the women in richly furnished graves. It is also possible to point to some rules for the acquisition of the costume.

³⁹ I thank mag. art. Henny Harald-Hansen who has given me references showing how such a piece of clothing was used in contemporary cultures. See also H. Harald-Hansen *Alverdens klæde dragter i farver, en dragt geografi* 1976.

⁴⁰ In this case the piece of clothing can be compared with the northern African *Haik*, which has almost the same dimensions (Marçais 1930).

⁴¹ At this time the Early Bronze Age textiles were examined by Elisabeth Munksgård with the help of conservator Dorthe Ørsnes and weaver Karen-Hanne Nielsen. I thank E. Munksgård for permission to participate in this.

⁴² National Museum photo archive nr. 10183.

⁴³ National Museum photo archive nr. 3889 9737.



Fig. 6a-b reconstruction of the female covering garment from the Bronze Age, with different positions of the hood pulled up over the head.

From a number of well-documented burials and hoards it is evident that the jewellery was frequently made at one time as a set, i.e. they were made on commission. But when and why? We know that children were not buried with sets of jewellery⁴⁴ even if their treatment at burial was the same as for the grown-ups, sometime even accompanying them as sacrifices (Grantzau, Marseen & Riismøller 1953). A number of burials of very young women⁴⁵ do, however, show that a female received the grown-up jewellery set sometime between the ages of 15 and 20.⁴⁶ This may be seen in connection with the jewellery sets having been made as commissions, and must mean that they were made for an important

occasion, possibly the transition from childhood to adulthood, or marriage - or both.

It will probably never be possible to determine the rules behind the acquisition of the costume with the same certainty. It does, however, point in that direction. It is therefore noticeable that the Egtved girl had a hairnet in the burial as she did not have the right prerequisites, i.e. long hair, for its use (Lomborg 1963). It must therefore demonstrate her right to have that hairstyle, a right that must have been fairly recent (and had not yet resulted in long hair). The coiffure in the Skrydstrup burial with its hairnet must therefore be interpreted as the married woman's hairstyle. Concerning the corded skirt, it has been pointed out that it symbolized the dignity of the priestess, as it was worn on the small bronze figurines, which were used in cultic activities; this must, however, be seen as uncertain in the absence of other

⁴⁴ Children's graves exist, for example DB I nrs. 144, 253, 593, 731, 999 & 1192.

⁴⁵ The number of graves for young people is noteworthy; an analysis from a large Urnfield cemetery in Mecklenburg has shown a very low life expectancy (Keilig 1965).

⁴⁶ DB I nr. 741:20-25 years old, 881 20 years old, Skrydstrup 20 years old, 758 young individual, 17456: 16-18 years old, Syvhoje: 15-20 years old (Nielsen 1952).

evidence. One can reasonably claim, though, that it is natural that the priestesses wore the common female costume.

We have to note that although the archaeological evidence indicates a number of rules for the acquisition of the costume, it does not allow for a closer or more precise explanation of these.

The following picture of the Bronze Age woman's appearance can be sketched: The hairstyles were either short as in Egtved, or long in an elaborate coiffure as in Skrydstrup, and in the Late Bronze Age similar plaits are seen on one of the small figurines from Fårdal (Munksgård 1974, fig. 50c, 88ff). Plaits are previously known from bog finds (Brøndsted 1962: 277) and from a Period V hoard with female jewellery from northern Germany, from Holtum Geest (Sprockhoff 1932: 21ff). The short-sleeved blouse left a part of the stomach bare and this part was decorated to distinguish the women's sparkling belt jewellery, and in connection with the short corded skirt this could have made a well-shaped women more attractive. Make-up was also added to this (Thrane 1962: 98). Leather shoes protected the feet (Broholm & Hald 1935, fig. 82), cloth could have been wrapped around the legs (Broholm & Hald 1940, figs. 141 & 142) and when it was cold the individual wrapped herself into the folds of a rich outer garment. The Bronze Age woman was therefore dressed for the varied Nordic climate.

Conclusions

It has been possible to reconstruct the Bronze Age clothing and jewellery traditions due to the fact that it was subjected to rules and regulations that were rooted in the social system. It was also standard for the deceased to be buried in the everyday costume. In this way religious and social practices united in a permanent expression of the society's organization, so it is possible for us today to lift the veil from a part of it. What we see depends on how much we are prepared to see, just as our results are never better than our methodological tools. In this article the goal has been to establish a cultural, historical snapshot of the Bronze Age woman dressed in clothing and jewellery, and other questions had to give way for this. The question about the origin of the costume will, however, finally be touched upon, if briefly, as it has played a role in older literature (Broholm & Hald 1940: 157ff). On this topic it is however only possible to put forward hypotheses and conjectures, as the positive evidence is lacking. A single well-documented burial find does, however, indicate a local Neolithic origin for the corded skirt (Brøndsted 1934, figs. 15 & 17), as one has been able to trace the cut of the blouse to prototypes made of skin (Hald 1950: 355ff).

The tradition of using an outer garment attached/closed with pins is, however, rather an influence from western Asia transmitted during the end of the Neolithic and expanded in connection with the oldest European Bronze Age cultures (Milojević 1955; Schaeffer 1949: chapter II; Piggot 1965, footnote 62).⁴⁷ Imitations of these pins in bone occur in Scandinavia during the Late Neolithic (Müller 1888, nr. 240-43).

The costume therefore seems to reflect the same blending of Oriental and European traditions that characterizes the Bronze Age as a whole.

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⁴⁷ Although Europe and Scandinavia were also reached by a number of influences from Mycenae, this is not applicable to the tradition of attaching the costume with pins ('the history of Greek pins does not begin before the later twelfth century', Jacobsthal 1956:1).

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